

# Edited for the British Pharmacological Society by

**J.F. Mitchell** (*Chairman*)

**G.M. Lees** (*Secretary*)

**Margaret Day** (*Press Editor*)

**C.V. Wedmore** (*Assistant Press Editor*)

## EDITORIAL BOARD

**N.J.M. Birdsall**  
London  
**A.T. Birmingham**  
Nottingham  
**A.G.H. Blakeley**  
Leicester  
**N.G. Bowery**  
Harlow  
**C.M. Bradshaw**  
Manchester  
**J.B. Caldwell**  
London  
**B.A. Callingham**  
Cambridge  
**J.A.J.H. Critchley**  
Edinburgh  
**Maureen M. Dale**  
London  
**J.C. Foreman**  
London  
**M.C. Harris**  
Birmingham  
**G. Henderson**  
Cambridge  
**C.R. Hiley**  
Cambridge  
**R.G. Hill**  
Cambridge  
**J.R.S. Hoult**  
London  
**P.P.A. Humphrey**  
Ware  
**L. Iversen**  
Harlow  
**D.H. Jenkinson**  
London  
**P.G. Jenner**  
London  
**W.E. Lindup**  
Liverpool  
**R. McBurney**  
Newcastle  
**J.C. McGrath**  
Glasgow

**D.S. McQueen**  
Edinburgh  
**C.A. Marsden**  
Nottingham  
**R.J. Marshall**  
Newhouse  
**D.A.A. Owen**  
Welwyn Garden City  
**M.E. Parsons**  
Welwyn Garden City  
**Priscilla J. Piper**  
London  
**N.L. Poyser**  
Edinburgh  
**T.W. Robbins**  
Cambridge  
**G.C.K. Roberts**  
London  
**T.L.B. Spriggs**  
Cardiff  
**T.W. Stone**  
London  
**E. Szabadi**  
Manchester  
**D.A. Terrar**  
Oxford  
**D.R. Tomlinson**  
Nottingham  
**E.M. Vaughan Williams**  
Oxford  
**R.M. Wadsworth**  
Glasgow  
**D.I. Wallis**  
Cardiff  
**D.F. Weetman**  
Sunderland  
**T.J. Williams**  
Harrow  
**G.N. Woodruff**  
Harlow  
**J.M. Young**  
Cambridge

## CORRESPONDING EDITORS

**P.R. Adams**  
Galveston, U.S.A.  
**J. Axelrod**  
Bethesda, U.S.A.  
**C. Bell**  
Melbourne, Australia  
**F.E. Bloom**  
La Jolla, U.S.A.  
**A.L.A. Boura**  
Clayton, Australia  
**P.B. Dews**  
Boston, U.S.A.  
**T. Godfraind**  
Brussels, Belgium  
**L.I. Goldberg**  
Chicagoo, U.S.A.  
**S.Z. Langer**  
Paris, France  
**R.A. Lewis**  
Harvard, U.S.A.  
**E. Muscholl**  
Mainz, Germany  
**M. Otsuka**  
Tokyo, Japan  
**R.H. Roth**  
New Haven, U.S.A.  
**M. Schachter**  
Alberta, Canada  
**S.H. Snyder**  
Baltimore, U.S.A.  
**L. Szekeres**  
Szeged, Hungary  
**B. Uvnäs**  
Stockholm, Sweden  
**P.A. Van Zwieten**  
Amsterdam, Netherlands  
**G. Velo**  
Verona, Italy  
**M.B.H. Youdim**  
Haifa, Israel

Papers will be considered for publication on all aspects of pharmacology, including chemotherapy.

*The British Journal of Pharmacology* is published monthly by Scientific & Medical Division, The Macmillan Press Ltd, Houndmills, Basingstoke, Hampshire RG21 2XS. Telephone: Basingstoke 29242. ISSN 0007 - 1188.

Registered Office: 4 Little Essex Street, London WC2R 3LF.

Manuscripts (two copies) should be sent to Dr G. M. Lees, Editorial Office, University of Aberdeen, Marischal College, Aberdeen AB9 1AS. Authors should consult the instructions inside the back cover.

Annual subscription UK £155.00; USA & Canada, US \$390, Airmail US \$460; Rest of world, £175, Airmail £225 (or equivalent in any other currency). (Orders must be accompanied by remittance. Prices correct at time of publication.)

Cheques should be made payable to Macmillan Journals Limited. All circulation, subscription or

general enquiries should be sent to: The Macmillan Press Ltd, Farndon Road, Market Harborough, Leicestershire, LE16 9NR, UK.

Overseas subscribers may make payments into UK Post Office Giro Account No. 519 2455. Full details must accompany the payment.

Second Class postage paid at New York, NY. US Mailing Agent: Expeditors of the Printed Word Ltd, 515 Madison Avenue, New York, NY 10022.

Enquiries concerning advertising space and rates should be addressed to: David R. Guthrie, Advertising Dept., The Macmillan Press Ltd, Brunel Road, Houndmills, Basingstoke, Hampshire, England RG21 2XS. Telephone: 0256 29242.

Publisher: Harry Holt.

Production & Editorial Services: Isobel Munday. Advertising & Promotion Services: David R. Guthrie.

Circulation Services: A.L. Clark.

© Copyright: Scientific & Medical Division, The Macmillan Press Ltd, 1985. All rights of reproduction are reserved in respect of all papers, articles, illustrations, etc., published in this journal in all countries of the world.

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The Macmillan Press Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of £1.00 per copy, plus £0.10 per page is paid directly to CCC, 21 Congress St., Salem, MA 01970, USA.

0007 - 1188/85 \$1.00 + \$0.10

# FORTHCOMING MEETINGS

## **International Conference on the Role of Formaldehyde in Biological Systems**

6–10 May 1985 *Balatonfured, Hungary*

Dr E. Tyihat, MTESZ, Hungarian Biochemical Society, PO Box 240, H-1368, Budapest, Hungary

## **Symposium on Properties of Polymers and Drug Delivery**

8–10 May 1985 *Stockholm, Sweden*

Swedish Academy of Pharmaceutical Sciences, PO Box 1136, S-111 81 Stockholm, Sweden

## **Meeting on Regulatory Peptides**

9–11 May 1985 *Gouvieux-Chantilly, France*

Dr J.M. Lewin, INSERM U.10, Hôpital Bichat, 756777 Paris 18

## **PET and NMR: new perspectives in neuroimaging and in clinical neurochemistry**

15–17 May 1985 *Padova, Italy*

Prof. L. Ballistín, Clinica Neurologica del' Università, via Giustiniani 5, 35128 Padova, Italy

## **Second Trace Amine Meeting**

16–19 May 1985 *Castle Weitenburg, near Tübingen, FRGermany*

Prof. P. Riederer, Arbeitsgruppe Neurochemie, Krankenhaus Wien-Lainz, Pav XI, Wolkersbergenstrasse 1, Wien, Austria

## **10th International Meeting of International Society for Neurochemistry**

19–24 May 1985 *Trento, Northern Italy*

Prof. G. Porcellati, Inst. di Biochimica, Policlinico, Casella Postale 3, 06100 Perugia, Italy

## **Society for Drug Research (Joint meeting with Italian Chemical Society)**

22–24 May 1985 *Rimini, Italy*

Institute of Biology, 20 Queensberry Place, London, UK

## **5th Annual George Washington University Spring Symposium on Neural and Endocrine Peptides and Receptors**

28–31 May 1985 *Washington DC, USA*

Dr T.W. Moody, Dept of Biochemistry, George Washington School of Medicine, 2300 Eye Street, NW, Washington DC 20037, USA

## **3rd International Conference of Biological Reactive Intermediates**

6–8 June 1985 *Maryland, USA*

Dr R. Snyder, Dept of Pharmacology, College of Pharmacy, Rutgers University, Piscataway, NJ 08854, USA

## **Physiological Society**

14–15 June 1985 *St Andrews, Scotland, UK*

Prof. A. Angel, Dept of Physiology, The University, Western Bank, Sheffield, UK

## **International Symposium on Molecular Aspects of Neurobiology**

19–21 June 1985 *Florence, Italy*

Fondazione Giovanni Lorenzini, via Monte Napoleone 23, 20121 Milan, Italy

**GREMI discussion. Is there a case for PAF-acether antagonists?**

*21 June 1985 Paris, France*

Dr E. B. Vargaftig, GREMI, Institut Pasteur, 28 Rue du Dr Roux, Paris, 75015, France

**Symposium on Clinical and Basic Aspects of Enzyme Induction and Inhibition**

*5–6 July 1985 Essen, FRGermany*

Medizinische Universitätsklinik, Hufelandstrasse 55, D-4300 Essen, FRGermany

**6th Wye College Symposium on Neuropathology**

*8–12 July 1985 Wye, Kent, UK*

Dr P.N. Leigh, Wessex Neurological Centre, Southampton General Hospital, Shirley, Southampton, UK

**Physiological Society**

*11–13 July 1985 Oxford, UK*

Prof. A. Angel, Dept of Physiology, The University, Western Bank, Sheffield, UK

**British Association for Psychopharmacology**

*14–16 July 1985 Bristol, UK*

Mrs E.F. Crowe, Dept of Clinical Pharmacology, Wellcome Research Laboratories, Beckenham, Kent, UK

**British Pharmacological Society**

*17–19 July 1985 Southampton, UK*

Dr G.N. Woodruff, Neuroscience Research Centre, Merck Sharp & Dohme Research Labs, Terlings Park, Eastwick Road, Harlow, Essex, UK

**Plant Flavonoids in Biology and Medicine**

*22–26 July 1985 Buffalo, New York, USA*

Dr E. Middleton, Dept of Medicine, Buffalo General Hospital, Buffalo, New York 14203, USA

**2nd Inst. Meeting on side-effects of Anti-inflammatory/Analgesic Drugs**

*31 July–2 August 1985 Cambridge, UK*

Dr K. Rainsford, Dept of Pharmacology, University of Cambridge, Hills Road, Cambridge, UK

**XIIth International Anatomical Congress**

*11–17 August 1985 London*

Details available shortly

**Xth International Congress of Lymphology**

*25–31 August 1985 Adelaide, Australia*

Dr J.R. Casley-Smith, Microcirculation Research Unit, University of Adelaide, Box 498 GPO, Adelaide, SA 5001, Australia

**British Association for the Advancement of Science**

*26–30 August 1985 University of Strathclyde, UK*

B.A., Fortness House, 23 Savile Row, London W1X 1AB

**9th Annual Conference of the European Neuroscience Association**

*8–12 September 1985      Oxford, UK*

Mrs W.R. Ball, The Wardens Lodgings, Keble College, Oxford

**British Pharmacological Society (Joint with Italian Society)**

*9–11 September 1985      Edinburgh, UK*

Dr G.N. Woodruff, Neuroscience Research Centre, Merck Sharp & Dohme Research Labs, Terlings Park, Eastwick Road, Harlow, Essex, UK

**6th International Bioanalytical Forum**

*10–13 September 1985      Guildford, UK*

Dr E. Reid, Guildford Academic Associates, 72 The Chase, Guildford, Surrey, UK

**The Physiological Society**

*12–14 September 1985      Cambridge, UK*

Prof. A. Angel, Dept of Physiology, The University, Western Bank, Sheffield, UK

**International Symposium on the Toxicological Applications of Cytochemistry, Histochemistry and Immunohistochemistry**

*24–27 September 1985      Cambridge, UK*

The Administrator, Royal Microscopical Society, 37/38 St Clements, Oxford, UK

**10th European Symposium on Hormones and Cell Regulation**

*30 September–3 October 1985      Strasbourg, France*

Dr R. J. B. King, Imperial Cancer Research Labs, Hormone Biochemistry Dept, PO Box 123, Lincolns Inn Fields, London, UK

**14th European Symposium on Clinical Pharmacy**

*5–18 October 1985      Stockholm, Sweden*

Swedish Academy of Pharmaceutical Sciences, PO Box 1136, S-111 81 Stockholm, Sweden

**British Pharmacological Society**

*18–20 December 1985      London, UK*

Dr G. N. Woodruff, Neuroscience Research Centre, Merck Sharp & Dohme Research Labs, Terlings Park, Eastwick Road, Harlow, Essex, UK

**Fondazione Giovanni Lorenzini International Conference on Prostaglandins and Related Compounds**

*3–6 June 1986      Florence, Italy*

Secretary, Fondazione Giovanni Lorenzini, Via Monte Napoleone 23, 20121 Milan, Italy

## INSTRUCTIONS TO AUTHORS

Whilst every effort is made by the publishers and editorial committee to see that no inaccurate or misleading data, opinion or statement appears in this Journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the responsibility of the contributor or advertiser concerned. Accordingly the publishers and the editorial committee and their respective employees, officers and agents accept no liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

Papers will be considered for publication in all fields of pharmacology.

**Before submitting a manuscript, authors must note the following points since failure to comply with instructions will lead to either delay or rejection of the manuscript. Overseas authors may find it helpful to seek advice from a Corresponding Editor in their country before submitting a manuscript for consideration.**

1. **Manuscripts** (2 copies) should be sent to Dr G.M. Lees, Editorial Office, University of Aberdeen, Marischal College, Aberdeen AB9 1AS. The manuscript must be typed in double spacing on one side of paper, not larger than A4 (210 × 297 mm). There should be a separate title page with the names of authors (in alphabetical order) and their appropriate addresses. One first name of each author may be included.

2. **Style** Papers must be submitted in the style of the journal (see any recent issue of the journal) and in accordance with the Instruction to Authors published in *Br. J. Pharmac.* (1984), **81**, 3–10. (Copies of these instructions may be obtained from Dr Lees.)

3. **Statement** The manuscript must be accompanied by the following statement: 'This manuscript has not been nor will be published in whole or in part by any other journal'. The statement may be included as part of the accompanying letter which must be signed by all authors. No paper will be accepted without this statement and the signatures of each author.

4. **Summary** (2 copies) This should be a short summary of results and conclusions arranged in numbered paragraphs.

5. **Short title** A short (running) title of not more than 50 letters and spaces should be submitted. This may be typed on the title page.

6. **Figures** These should not be larger than A4 (210 × 297 mm) and may be in the form of original drawings, recorded tracings or high quality photographic prints made from them. Negative prints of kymograph tracings (black on white) should be provided and both ordinates and abscissae should be calibrated. Lettering on figures should be inserted in pencil. Symbols which are to appear in figures or legends should be chosen from the following:

○ ● □ ■ ▲ △ ▽ ▿ ◇ ◆ + ×

Photographs and photomicrographs should be printed on glossy paper and should be larger than the size required for reproduction. Each figure legend should be typed on a separate sheet of paper.

7. **Tables** These should generally have not more than 85 characters to a line (counting spaces between columns as 4 characters) and never more than 110 characters to a line. Each table should be typed on a separate sheet of paper.

8. **References** These must be collected in alphabetical order at the end of the paper. They should include the authors' names, year of publication (in brackets), title of article, title of publication (abbreviated in accordance with the most recent edition of the *World List of Scientific Periodicals*), volume number and first and last page numbers. References to books should, in addition, include the names of editors, the edition number (where appropriate), the town of origin then the name of publisher. Where citation is made to a paper 'in press' the paper should be possible, accompany the manuscript, as an aid to the editor and referee.

9. **Short Communications** These will be accepted if they merit priority publication and do not require revision. They may contain up to 1,200 words of text including references and only one figure or table. The summary should be a single paragraph. A statement must be included.

10. **Key Words** Up to ten key words or phrases of two to three words should be displayed on the title page.

**Two page proofs** will be supplied, one of which may be retained by the authors. The other should be corrected immediately and returned to the Press Editor. Correction should be kept to a minimum.

**Twenty-five reprints** will be supplied to the authors free of charge. Additional reprints can be purchased. A reprint order form, which should be returned promptly, will be sent out with the proofs. If reprints will not be available from the author, a note to this effect may be added at the end of the text.

# British Journal of Pharmacology

VOLUME 85 NUMBER 1 MAY 1985

## SHORT COMMUNICATION

- 3 CHURCH, M.K. & HUGHES, P.J. Adenosine potentiates immunological histamine release from rat mast cells by a novel cyclic AMP-independent cell-surface action

## PAPERS

- 7 LOTE, C.J., McVICAR, A.J. & THEWLES, A. Reduction of urinary excretion of PGE<sub>2</sub> and 6 keto PGF<sub>1α</sub> by tiaprofenic acid
- 11 DENNIS, P.D. & VAUGHAN WILLIAMS, E.M. Effects on rabbit cardiac potentials of aprindine and indecainide, a new antiarrhythmic agent, in normoxia and hypoxia
- 21 TRZECIAKOWSKI, J.P. Synergistic interaction between histamine and ouabain on ventricular fibrillation threshold
- 29 FINNEY, M.J.B., KARLSSON, J.-A. & PERSSON, C.G.A. Effects of bronchoconstrictors and bronchodilators on a novel human small airway preparation
- 37 HORTON, R.C., LOGAN, S.D. & WOLSTENCROFT, J.H. A microiontophoretic study of the actions of the putative sleep factor, piperidine, in the rat brainstem
- 45 EL-GHAZALY, M., KENAWY, S., KHAYYAL, M.T., ROUSHDY, H. & SALEH, S. Effect of exposure to radiation on the inflammatory process and its influence by diclofenac
- 51 BARRY, W.H., HOROWITZ, J.D. & SMITH, T.W. Comparison of negative inotropic potency, reversibility, and effects on calcium influx of six calcium channel antagonists in cultured myocardial cells
- 61 DONNERER, J. & LEMBECK, F. New models for the evaluation of opioid effects in the guinea-pig ileum
- 65 ARIYOSHI, M., HASUO, H., KOKETSU, K., OHTA, Y. & TOKIMASA, T. Histamine is an antagonist of the acetylcholine receptor at the frog endplate
- 75 HOF, R.P. Modification of vasopressin- and angiotensin II-induced changes by calcium antagonists in the peripheral circulation of anaesthetized rabbits
- 89 AMERINI, S., GIOTTI, A. & MUGELLI, A. Effect of verapamil and diltiazem on calcium-dependent electrical activity in cardiac Purkinje fibres
- 97 GWATHMEY, J.K. & MORGAN, J.P. The effects of milrinone and piroximone on intracellular calcium handling in working myocardium from the ferret
- 109 ARCHER, C.B., MacDONALD, D.M., MORLEY, J., PAGE, C.P., PAUL, W. & SANJAR, S. Effects of serum albumin, indomethacin and histamine H<sub>1</sub>-antagonists on Paf-acether-induced inflammatory responses in the skin of experimental animals and man
- 115 BENNETT, T. & GARDINER, S.M. Pressure sensitivity to exogenous vasopressin in conscious, adult rats treated neonatally with capsaicin
- 121 BACK, D.J. & TJIA, J.F. Inhibition of tolbutamide metabolism by substituted imidazole drugs *in vivo*: evidence for a structure-activity relationship
- 127 NORLUND, L. & SEHLIN, J. Effect of tetracaine and glibenclamide on <sup>45</sup>Ca<sup>2+</sup> handling by isolated pancreatic islets
- 133 OLSON, L.G. & SAUNDERS, N.A. Ventilatory stimulation by dopamine-receptor antagonists in the mouse
- 143 KALSNER, S. Clonidine and presynaptic adrenoceptor theory

- 149 BYRNE, N.G. & MUIR, T.C. Mechanisms underlying electrical and mechanical responses of the bovine retractor penis to inhibitory nerve stimulation and to an inhibitory extract
- 163 GREENE, R.W., HAAS, H.L. & HERMANN, A. Effects of caffeine on hippocampal pyramidal cells *in vitro*
- 171 BAUER, V. Effects of 3,4-diaminopyridine and tetraethylammonium on the pre- and post-junctional  $\alpha$ -adrenoceptor mediated inhibitory actions of noradrenaline in the guinea-pig ileum
- 179 MALTA, E., MIAN, M.A. & RAPER, C. The *in vitro* pharmacology of xamoterol (ICI 118, 587)
- 189 CALIXTO, J.B. & LOCH, S. Ketamine-inhibition of calcium-induced contractions in depolarized rat uterus: a comparison with other calcium antagonists
- 197 BOWMAN, D. & HOPE, D.B. Forskolin: its effects on potassium-evoked release of vasopressin from the rat neurohypophysis
- 205 COWLRICK, I.S. & SHEPPERSON, N.B. The effects of a new opioid analgesic, meptazinol, on the respiration of the conscious rat
- 213 PUURUNEN, J. Role of putative neurotransmitters in the central gastric antisecretory effect of prostaglandin E<sub>2</sub> in rats
- 223 KARAKI, H., NAKAGAWA, H. & URAKAWA, N. Age-related changes in the sensitivity to verapamil and sodium nitroprusside of vascular smooth muscle of rabbit aorta
- 229 GAGE, P.W. & MCKINNON, D. Effects of pentobarbitone on acetylcholine-activated channels in mammalian muscle
- 237 LEIGH, P.J. & MacDERMOT, J. Desensitization of prostacyclin responsiveness in a neuronal hybrid cell line: selective loss of high affinity receptors
- 249 BELL, C. Comparison of the antagonistic effects of phentolamine on vasoconstrictor responses to exogenous and neurally released noradrenaline *in vivo*
- 255 GRANGER, S.E., HOLLINGSWORTH, M. & WESTON, A.H. A comparison of several calcium antagonists on uterine, vascular and cardiac muscles from the rat
- 263 ABEL, M.H. & HOLLINGSWORTH, M. The potencies and selectivities of four calcium antagonists as inhibitors of uterine contractions in the rat *in vivo*
- 271 HUGHES, I.E. & MACKAY, D. Quantification of the characteristics of antagonists exhibiting both competitive antagonism and functional interaction
- 277 GOODALL, J., HUGHES, I.E. & MACKAY, D. Similarity between  $\mu$ -opioid receptors in mouse vas deferens and guinea-pig ileum
- 285 HAMID, S. & WHITTLE, B.J.R. Interaction of prostaglandin D<sub>2</sub> with prostacyclin, carbacyclin and the hydantoin prostaglandin, BW245C, in guinea-pig platelets
- 291 BURNSTOCK, G. & HOYLE, C.H.V. PACPX - a substituted xanthine - antagonizes both the A<sub>1</sub> and A<sub>2</sub> subclasses of the P<sub>1</sub>-purinoceptor: antagonism of the A<sub>2</sub> subclass is competitive but antagonism of the A<sub>1</sub> subclass is not
- 297 GARTHWAITE, J. Cellular uptake disguises action of L-glutamate on N-methyl-D-aspartate receptors
- 309 RIBEIRO, J.A. & SEBASTIÃO, A.M. Inhibitory effects of forskolin and papaverine on nerve conduction partially blocked by tetrodotoxin in the frog sciatic nerve

## FORTHCOMING MEETINGS