

CAMBRIDGE

JOURNALS

Epidemiology and Infection

Editor-in-Chief

Norman Noah, London School of Hygiene and Tropical Medicine, UK

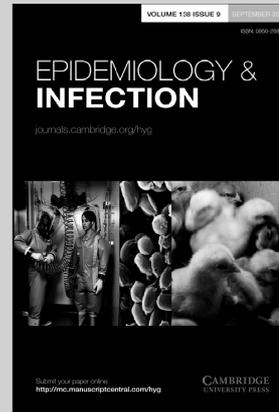
Epidemiology and Infection publishes original reports and reviews on all aspects of infection in humans and animals. Particular emphasis is given to the epidemiology, prevention and control of infectious diseases. The field covered is broad and includes the zoonoses, tropical infections, food hygiene, vaccine studies, statistics and the clinical, social and public health aspects of infectious disease. Papers covering microbiology and immunology, which have an epidemiological relevance, are part of this broad field. Papers come from medical and veterinary scientists worldwide. It has become the key periodical in which to find the latest reports on recently discovered infections and new technology. For those concerned with policy and planning for the control of infections, the papers on mathematical modelling of epidemics caused by historical, current and emergent infections, will be of particular value.

Price information

is available at: <http://journals.cambridge.org/hyg>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/alerts>



Epidemiology and Infection
is available online at:
<http://journals.cambridge.org/hyg>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/hyg>



CAMBRIDGE

JOURNALS

Journal of Helminthology

Editor

John Lewis, Royal Holloway, University of London, UK

Journal of Helminthology publishes original papers and review articles on all aspects of pure and applied helminthology, particularly those helminth parasites of environmental health, medical or veterinary importance. Research papers on helminths in wildlife hosts, including plant and insect parasites, are also published along with taxonomic papers contributing to the systematics of a group. The journal will be of interest to academics and researchers involved in the fields of human and veterinary parasitology, public health, microbiology, ecology, epidemiology and biochemistry.

Price information

is available at: <http://journals.cambridge.org/jhl>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/jhl-alerts>



Journal of Helminthology

is available online at:

<http://journals.cambridge.org/jhl>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/jhl>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Journal of Tropical Ecology

Editor

Ian Turner, Winchelsea, UK

Journal of Tropical Ecology publishes papers in the important and now established field of the ecology of tropical regions, either arising from original research (experimental or descriptive) or forming significant reviews. First published in 1985, *Journal of Tropical Ecology* has become a major international ecological journal. With clear, stimulating and readable reports of recent research findings, the journal provides a platform for the dissemination of information on all aspects of tropical communities and ecosystems

Price information

is available at: <http://journals.cambridge.org/tro>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/tro-alerts>



Journal of Tropical Ecology
is available online at:
<http://journals.cambridge.org/tro>

To subscribe contact Customer Services

in Cambridge:
Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:
Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/tro>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Animal Health Research Reviews

Published in collaboration with the Conference of Research
Workers in Animal Diseases

Editor-in-Chief

C. Gyles, *University of Guelph, Canada*

Animal Health Research Reviews provides an international forum for the publication of reviews and commentaries on all aspects of animal health. Papers include in-depth analyses and broader overviews of all facets of health and science in both domestic and wild animals. Major subject areas include physiology and pharmacology, parasitology, bacteriology, food and environmental safety, epidemiology and virology. The journal will be of interest to researchers involved in animal health, parasitologists, food safety experts and academics interested in all aspects of animal production and welfare.

Price information

is available at: <http://journals.cambridge.org/ahr>

Free email alerts

Keep up-to-date with new content

<http://journals.cambridge.org/ahr-alerts>



Animal Health Research Reviews
is available online at:
<http://journals.cambridge.org/ahr>

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

subscriptions_newyork@cambridge.org

For free online content visit:
<http://journals.cambridge.org/ahrsample>



CAMBRIDGE

JOURNALS

The Lichenologist

Published on behalf of The British Lichen Society

Senior Editor

Peter D. Crittenden, University of Nottingham, UK

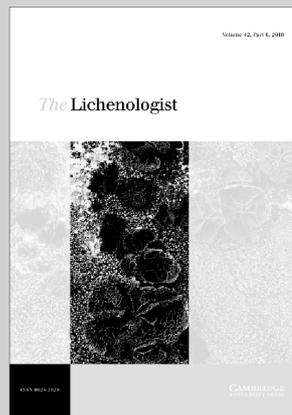
The Lichenologist is the premier scientific journal devoted exclusively to the study of lichens worldwide. As the leading forum for the dissemination of new concepts and topical reviews, *The Lichenologist* reaches more scientists concerned with the study of lichens and lichen symbionts than any other single journal. All aspects of lichenology are considered including systematics and phylogenetics; molecular biology; ultrastructure, anatomy and morphology; secondary chemistry, effects of pollutants and use as bioindicators; biogeography.

Price information

is available at: <http://journals.cambridge.org/lic>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/lic-alerts>



The Lichenologist
is available online at:
<http://journals.cambridge.org/lic>

To subscribe contact Customer Services

in Cambridge:
Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:
Phone +1 (845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

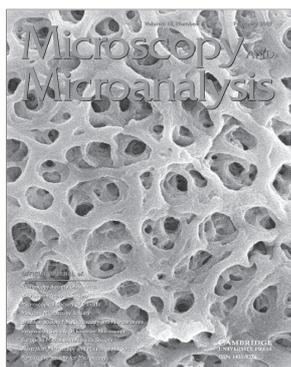
For free online content visit:
<http://journals.cambridge.org/lic>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS



Microscopy AND Microanalysis

Published for the Microscopy Society of America

Microscopy and Microanalysis

is available online at:
<http://journals.cambridge.org/mam>

Editor-in-Chief

Robert L. Price, University of South Carolina, USA

**To subscribe contact
Customer Services**

in Cambridge:
Phone +44 (0)1223 326070
Fax +44 (0)1223 325150
Email journals@cambridge.org

in New York:
Phone +1(845) 353 7500
Fax +1 (845) 353 4141
Email
subscriptions_newyork@cambridge.org

Microscopy and Microanalysis, a peer-reviewed bimonthly journal publishes original research papers in the fields of microscopy, imaging, and compositional analysis. The journal provides significant articles that describe new and existing techniques and instrumentation, as well as the applications of these to the imaging and analysis of microstructure.

Price information is available at:
<http://journals.cambridge.org/mam>

Free email alerts

Keep up-to-date with new material – sign up at
<http://journals.cambridge.org/alerts>

For free online content visit:
<http://journals.cambridge.org/mam>



**CAMBRIDGE
UNIVERSITY PRESS**

Parasitology

Back volumes. Vols. 1–71: Inquiries should be addressed to Wm. Dawson & Sons Ltd, Cannon House, Folkestone, Kent. Vols. 72 onwards: quotations for parts still in print may be obtained from Cambridge or the American Branch of Cambridge University Press.

Copying. This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per-copy fee of \$16.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0031–1820/2011 \$16.00.

Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions.

ISI Tear Sheet Service. 3501 Market Street, Philadelphia, Pennsylvania 19104, USA, is authorized to supply single copies of separate articles for private use only.

For all other use, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

Claims for missing issues can only be considered if made immediately after receipt of the subsequent issue.

Advertising. Details of advertising in Parasitology may be obtained from the publisher.

Online submission. Authors are encouraged to submit their manuscripts online. Go to <http://mc.manuscriptcentral.com/par/> to open an author's account for Parasitology. Manuscript Central is helping to improve the speed of the publication process for the journal.

Front Cover illustration: Immunohistological comparison of TGF- β and HLA-DR expression by macrophages and CD3⁺ T cells in onchocercomas from untreated hyporeactive and hyperreactive patients. From Korten *et al.* Vol. 138(1) pp. 35–45.

© Cambridge University Press 2011

The Edinburgh Building, Cambridge CB2 8RU, United Kingdom
32 Avenue of The Americas, New York, NY 10013-2473, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
C/ Orense, 4, Planta 13 28020 Madrid, Spain
Lower Ground Floor, Nautica Building, The Water Club, Beach Road,
Granger Bay, 8005 Cape Town, South Africa

Printed in the United Kingdom at the University Press, Cambridge

PARASITOLOGY

CONTENTS

REVIEW ARTICLE

**cAMP-dependent protein kinase from
Plasmodium falciparum: an update**

Nathalie Wurtz, Charles Chapus, Jerome Desplans
and Daniel Parzy

1

RESEARCH ARTICLES

**Influence of host reproductive state on *Sphaerothecum
destruens* prevalence and infection level**

D. Andreou, M. Hussey, S. W. Griffiths and R. E. Gozlan

26

**Low levels of transforming growth factor-beta (TGF-beta)
and reduced suppression of Th2-mediated inflammation in
hyperreactive human onchocerciasis**

S. Korten, A. Hoerauf, J. T. Kaifi and D. W. Büttner

35

**Effect of *Crotalus viridis viridis* snake venom on the
ultrastructure and intracellular survival of *Trypanosoma cruzi***

Camila M. Adade, Bruno Lemos Cons, Paulo A. Melo
and Thaís Souto-Padrón

46

**Novel trypanosome *Trypanosoma gilletti* sp. (Euglenozoa:
Trypanosomatidae) and the extension of the host range of
Trypanosoma copemani to include the koala
(*Phascolarctos cinereus*)**

L. M. McInnes, J. Hanger, G. Simmons, S. A. Reid and U. M. Ryan

59

**Population genetic structure of the prairie dog flea and
plague vector, *Oropsylla hirsuta***

R. Jory Brinkerhoff, Andrew P. Martin, Ryan T. Jones
and Sharon K. Collinge

71

**Microfluidic bioassay to characterize parasitic nematode
phenotype and anthelmintic resistance**

Baozhen Chen, Alex Deutmeyer, John Carr, Alan P. Robertson,
Richard J. Martin and Santosh Pandey

80

**Oncospheral penetration glands are the source of the
EG95 vaccine antigen against cystic hydatid disease**

A. Jabbar, D. J. Jenkins, S. Crawford, A. K. Walduck, C. G. Gauci
and M. W. Lightowlers

89

**Genetic and environmental determinants of host use in the
trematode *Maritrema novaezealandensis* (Microphallidae)**

Anson V. Koehler, Anna G. Gonchar and Robert Poulin

100

**Host-parasite relationships in flatfish (Pleuronectiformes) –
the relative importance of host biology, ecology
and phylogeny**

J. F. Marques, M. J. Santos, C. M. Teixeira, M. I. Batista
and H. N. Cabral

107

**Fitness and virulence of a bacterial endoparasite in
an environmentally stressed crustacean host**

Anja Coors and Luc De Meester

122

**First fossil record of parasitism in Devonian calcareous
sponges (stromatoporoids)**

Mikołaj K. Zapalski and Benoît L. M. Hubert

132