CAMBRIDGE

JOURNALS

PARASITOLOGY

Editorial Board Development 40% under 40

We invite young enthusiastic parasitologists, in their 30s and 40s, who might be interested in joining the Editorial Board of *Parasitology* to contact the Editor-in-Chief.

See overleaf for more details.

Publishing original research and review papers on all aspects of parasitology and host-parasite relationships.

journals.cambridge.org/par





PARASITOLOGY

Editorial Board Development 40% under 40 years old

In common with all international journals, the Editors of *Parasitology* have a large editorial board (EB) of distinguished parasitologists, who advise on a number of aspects of running the journal.

Parasitology has a policy of replacing members of the EB over time to keep the Board up to date and refreshed. The Editors now wish to give younger scientists, who have established themselves in their field and are working at the forefront of research, an opportunity to join the Board.

Although *Parasitology* is over 100 years old, we do not want this longevity reflected in the make-up of the EB; so as a long-term aim we would like up to 40% of the Editorial Board to be under the age of 40.

We invite young enthusiastic parasitologists, in their 30s and 40s, who might be interested in joining the EB of *Parasitology* to contact the Editor-in-Chief, Professor Stephen Phillips at Stephen.Phillips@glasgow.ac.uk. Members of the EB serve for 3 years and terms can be renewed. Please supply the name of one referee. Details of what is expected of an EB member will be sent to you on application.

Keep Up-to-Date

Sign up to receive free email alerts to keep up to date with the latest research in your field **journals.cambridge.org/par-alerts**

Sample Content

Read the papers in the sample issue for free journals.cambridge.org/parsample

Instructions for contributors

Read the instructions for contributors **journals.cambridge.org/par/ifc**

Publishing in Parasitology:

- Average time from submission to first decision just 26 days
- Online submission system
- Rapid online publication via FirstView and Parasitology Express
- Rigorous peer-review process
- An Open Access option is available to authors of articles at the rate of £1695/\$2700 per article



CAMBRIDGE

JOURNALS

Journal of Tropical Ecology

Editor

lan 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



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

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.



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

Americas:

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

Rest of world:

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

Price Information

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



JOURNALS

The Lichenologist

Published on behalf of The British Lichen Society

Senior Editor

Peter D. Crittenden, University of Nottingham, UK

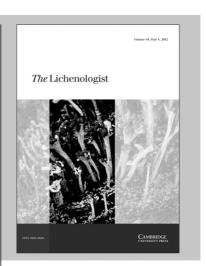
The Lichenologist is the premier scientific journal devoted exclusively to the study of lichens worldwide. As the leading forum for the dissemination of new concepts and topical reviews, *The Lichenologist* reaches more scientists concerned with the study of lichens and lichen symbionts than any other 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



JOURNALS

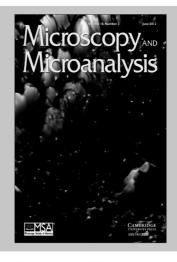
Microscopy and Microanalysis

Published for the Microscopy Society of America



Robert L. Price, University of South Carolina, USA

Microscopy and Microanalysis, a peer-reviewed bimonthly, publishes original research papers in the fields of microscopy, imaging, and compositional analysis. This distinguished international forum is intended for microscopists in both biology and materials science. 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. Microscopy and Microanalysis also includes review articles, short communications, letters to the editor, and book reviews.



Microscopy and Microanalysis is available online at: http://journals.cambridge.org/mam

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

Free email alerts

Keep up-to-date with new material – sign up at

journals.cambridge.org/register

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



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 0031–1820/2013 \$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: The upper images show (from left to right) a scanning electron micrograph of a *Toxoplasma gondii* tachyzoite entangled in a neutrophil extracellular trap (from Hermosilla *et al.*, this issue), an udder of a cow chronically infected with *Besnoitia besnoiti* and a histological section cut through the dermis and epidermis of a biopsy of a cow suffering from chronic besnoitiosis (both from Cortes *et al.*, this issue), and a schematic representation of an incucible knockout system for *T. gondii*, using the DD domain and Shld allowing stability and overexpression of a desired protein (from Jimenez-Ruiz *et al.*, this issue). The lower panel depicts an immunolfourescent micrograph of *B. besnoitia* tachyzoites in RPE-1 cells (green) recruiting the Golgi apparatus (red) (from Cardoso *et al.*, this issue), a structural model of BKI interactions in the ATP-binding domains of PfCDPK1 and TgCDPK1 (from Keyloun *et al.*, this issue), a schematic representation of molecules of *Cryptosporidium* involved in attachment and invasion of the host cell (from Lendner and Daugschies., this issue), and a scanning electron micrograph of *Neospora caninum* tachyzoites adhering to canine epithelial cells (from A. Hemphill, University of Bern).

© Cambridge University Press 2014

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 UK by Bell & Bain

PARASITOLOGY

CONTENTS

SPECIAL ISSUE ARTICLES ApiCOWplexa 2013 – 2nd International Meeting on Apicomplexan Parasites in Farm Animals Andrew Hemphill and Alexandre Leitão	1355	Besnoitia besnoiti and Toxoplasma gondii: two apicomplexan strategies to manipulate the host cell centrosome and Golgi apparatus Rita Cardoso, Sofia Nolasco, João Gonçalves, Helder C. Cortes, Alexandre Leitão and Helena Soares Control options for Neospora caninum – is there anything new or are we going backwards? Michael P. Reichel, Milton M. MCAllister, William E. Pomroy, Carlos Campero, Luis M. Ortega-Mora and John T. Ellis
Persistence of <i>Toxoplasma gondii</i> tissue stages in poultry over a conventional fattening cycle AC. Geuthner, M. Koethe, M. Ludewig, S. Pott, G. Schares, A. Daugschies and B. Bangoura	1359	
Veterinary vaccines against toxoplasmosis Elżbieta Hiszczyńska-Sawicka, Justyna M. Gatkowska, Marcin M. Grzybowski and Henryka Długońska	1365	Experimental ruminant models for bovine neosporosis: what is known and what is needed Julio Benavides, Esther Collantes-Fernández, Ignacio Ferre, Valentín Pérez, Carlos Campero, Rinaldo Mota, Elisabeth Innes and Luis M. Ortega-Mora
Strategies for anti-coccidial prophylaxis David M. Witcombe and Nicholas C. Smith	1379	
Advantages and disadvantages of conditional systems for characterization of essential genes in <i>Toxoplasma gondii</i> Elena Jiménez-Ruiz, Eleanor H. Wong, Gurman S. Pall and Markus Meissner	1390	The intriguing host innate immune response: novel anti-parasitic defence by neutrophil extracellular traps Carlos Hermosilla, Tamara Muñoz Caro, Liliana M. R. Silva, Antonio Ruiz and Anja Taubert
Purine salvage in the apicomplexan Sarcocystis neurona, and generation of hypoxanthine-xanthine-guanine phosphoribosyltransferase-deficient clones for positive-negative selection of transgenic parasites Sriveny Dangoudoubiyam, Zijing Zhang and Daniel K. Howe	1399	The gatekeeper residue and beyond: homologous calcium dependent protein kinases as drug development targets for veterinarian Apicomplexa parasites Katelyn R. Keyloun, Molly C. Reid, Ryan Choi, Yifan Song, Anna M.W. Fox, Heidi K. Hillesland, Zhongsheng Zhang,
A review on bovine besnoitiosis: a disease with economic impact in herd health management, caused by Besnoitia besnoiti (Franco and Borges, 1916)		Ramasubbarao Vidadala, Ethan A. Merritt, Audrey O. T. Lau, Dustin J. Maly, Erkang Fan, Lynn K. Barrett, Wesley C. van Voorhis and Kayode K. Ojo
Helder Cortes, Alexandre Leitão, Bruno Gottstein and Andrew Hemphill	1406	Cryptosporidium infections: molecular advances Matthias Lendner and Arwid Daugschies
Dynamics of <i>Besnoitia besnoiti</i> infection in cattle G. Álvarez-García, P. García-Lunar, D. Gutiérrez-Expósito, V. Shkap and L. M. Ortega-Mora	1419	







1436

1455

1471

1489

1499

1511

https://doi.org/10.1017/S0031182014001334 Published online by Cambridge University Press