

CAMBRIDGE

JOURNALS

Knowledge is no longer shelved

The *Cambridge Journals Digital Archive* contains more than 160 journals, more than 3 million pages and more than 8 million linked references. Knowledge is now more visible and more searchable than ever.



journals.cambridge.org/archives



CAMBRIDGE
UNIVERSITY PRESS

Go Mobile

CJO Mobile (CJOm) is a streamlined
Cambridge Journals Online (CJO)
for smartphones and other
small mobile devices



- Use CJOm to access all journal content including *FirstView* articles which are published online ahead of print
- Access quickly and easily thanks to simplified design and low resolution images
- Register for content alerts or save searches and articles – they will be available on both CJO and CJOm
- Your device will be detected and automatically directed to CJOm via: journals.cambridge.org



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

Rising Impact Factors

▲ In the Thomson Reuters 2010 ▲
Journal Citation Reports®,
Cambridge journals saw an
average increase in Impact Factor
of almost 16.4%.

▲ Cambridge's Humanities and ▲
Social Science journals increased
by 23.7%, against a 0.1% average
increase in the SSCI*.

▲ Cambridge Science, Technology ▲
and Medicine journals increased
by 10.6% in comparison to a 1.8%
average increase in the SCI*.

This picture is based on figure 8 of 'The effect of sudden source buoyancy
flux increases on turbulent plumes', by M.M. Scase, A.L. Aspden & C.P. Caulfield
Journal of Fluid Mechanics, Volume 635

* The comparison of percentage changes refers to those categories that include
Cambridge journals only and not the entire collection of SCI or SSCI journals.



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.

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

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>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

animal

Published for The Animal Consortium
www.animal-journal.eu

Editor-in-Chief

Michel Doreau, *INRA, Clermont-Theix, France*

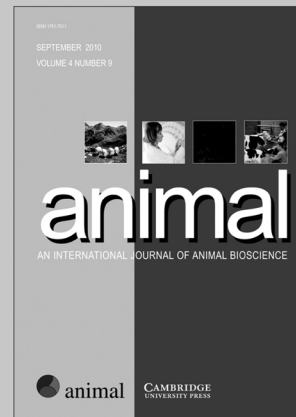
animal publishes original cutting-edge research, 'hot' topics and horizon-scanning reviews on animal-related aspects of the life sciences at the molecular, cellular, organ, whole animal and production system levels.

The main subject areas include: breeding and genetics; nutrition; physiology and functional biology of systems; behaviour, health and welfare; farming systems, environmental impact and climate change; product quality, human health and well-being.

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

Free email alerts

Keep up-to-date with new content
<http://journals.cambridge.org/anm-alerts>



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

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/anm>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

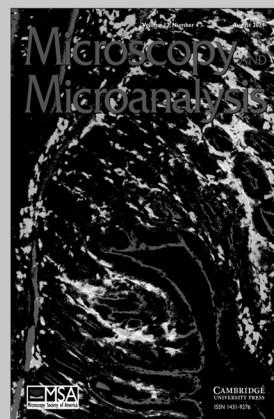
Microscopy and Microanalysis

Published for the Microscopy Society of America

Editor

Robert L. Price, *University of South Carolina, USA*

Microscopy and Microanalysis, a peer-reviewed bi-monthly, 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>



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 0031–1820/2012 \$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: Difference gel electrophoresis comparison of protein expression in non-isogenic pentamidine sensitive and pentamidine resistant *Leishmania* promastigotes. Credited to Poonam Tewary and Richard Burchmore.

© Cambridge University Press 2012

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 MPG Books Ltd

PARASITOLOGY

CONTENTS

PREFACE: Proteomic insights into parasite biology

Michael L. Ginger, Paul G. McKean, Richard Burchmore and Karen M. Grant 1101

Parasites, proteomes and systems: has Descartes' clock run out of time?

J. M. Wastling, S. D. Armstrong, R. Krishna and D. Xia 1103

Strategies to dissect parasite proteomes

Karl Burgess and Richard Burchmore 1119

Proteomic analysis of *Plasmodium* in the mosquito: progress and pitfalls

M. N. Wass, R. Stanway, A. M. Blagborough, K. Lal, J. H. Prieto, D. Raine, M. J. E. Sternberg, A. M. Talman, F. Tomley, J. Yates III and R. E. Sinden 1131

What has proteomics taught us about *Leishmania* development?

Polina Tsigankov, Pier Federico Gherardini, Manuela Helmer-Citterich and Dan Zilberstein 1146

Proteomics on the rims: insights into the biology of the nuclear envelope and flagellar pocket of trypanosomes

Mark C. Field, Vincent Adung'A, Samson Obado, Brian T. Chait and Michael P. Rout 1158

Proteomics and the *Trypanosoma brucei* cytoskeleton: advances and opportunities

Neil Portman and Keith Gull 1168

Proteomics at the schistosome-mammalian host interface: any prospects for diagnostics or vaccines?

R. Alan Wilson 1178

Helminth parasite proteomics: from experimental models to human infections

Francisca Mutapi 1195

Anthelmintic metabolism in parasitic helminths: proteomic insights

Peter M. Brophy, Neil Mackintosh and Russell M. Morphew 1205

Parasite glycans and antibody-mediated immune responses in *Schistosoma* infection

Angela van Diepen, Niels S. J. van der Velden, Cornelis H. Smit, Moniek H. J. Meevissen and Cornelis H. Hokke 1219