

CAMBRIDGE

JOURNALS



Animal Health Research Reviews

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

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

Editor-in-Chief

C. Gyles, University of Guelph, Canada

**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

Animal Health Research Reviews provides an international forum for the publication of reviews and commentaries on all aspects of animal health. The journal covers all facets of animal health and science, including but not limited to both infectious and non-infectious diseases in domestic and wild animals.

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

Free email alerts

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

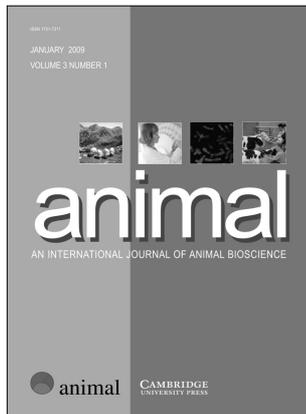
For free online content visit
<http://journals.cambridge.org/ahr>



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS



animal

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

animal

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

**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

Editor-in-Chief

Michel Doreau, INRA, 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.

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

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/anm>



**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 0031–1820/2010 \$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: Neoplasms in the pseudocoeloma cavity of the filaria *Onchocerca volvulus* stained for different proteins indicating the filarial origin of the potentially lethal tumors. From Brattig *et al.* Vol. 137(5) pp. 841–854.

© Cambridge University Press 2010

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/Basilica, 17, 1° (oficinas), 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

Iron metabolism in trypanosomatids, and its crucial role in infection

M. C. Taylor and J. M. Kelly

899

RESEARCH ARTICLES

Identification of *Giardia* species and *Giardia duodenalis* assemblages by sequence analysis of the 5.8S rDNA gene and internal transcribed spacers

Simone M. Cacciò, Relja Beck, Andre Almeida, Anna Bajzer and Edoardo Pozio

919

Merozoite proteins from *Babesia* sp. BQ1 (Lintan) as potential antigens for serodiagnosis by ELISA

G. Q. Guan, A. Chauvin, H. Rogniaux, J. X. Luo, H. Yin and E. Moreau

927

Molecular detection of *Babesia* spp. and other haemoparasitic infections of cattle in Maputo Province, Mozambique

Tiago M. Martins, Luís Neves, Olívia C. Pedro, José M. Fafetine, Virgílio E. Do Rosário and Ana Domingos

939

Development and evaluation of different PCR-based typing methods for discrimination of *Leishmania donovani* isolates from Nepal

N. R. Bhattarai, J. C. Dujardin, S. Rijal, S. De Doncker, M. Boelaert and G. Van Der Auwera

947

Experimental infection of two South American reservoirs with four distinct strains of *Trypanosoma cruzi*

Dawn M. Roellig, Katherine McMillan, Angela E. Ellis, John L. Vandeberg, Donald E. Champagne and Michael J. Yabsley

959

Selection of *Apis mellifera* workers by the parasitic mite *Varroa destructor* using host cuticular hydrocarbons

F. Del Piccolo, F. Nazzi, G. Della Vedova and N. Milani

967

Acaricidal activities of traditional Chinese medicine against the house dust mite, *Dermatophagoides farinae*

Hai-Qiang Wu, Jing Li, Zhen-Dan He and Zhi-Gang Liu

975

Copulation enhances resistance against an entomopathogenic fungus in the mealworm beetle *Tenebrio molitor*

Terhi M. Valtonen, Heidi Viitaniemi and Markus J. Rantala

985

Concurrent nematode infection and pregnancy induce physiological responses that impair linear growth in the murine foetus

M. R. Odiere, K. G. Koski, H. A. Weiler and M. E. Scott

991

The relative importance of host characteristics and co-infection in generating variation in *Heligmosomoides polygyrus* fecundity

L. T. Luong, S. E. Perkins, D. A. Grear, A. Rizzoli and P. J. Hudson

1003

Multilocus phylogenetic analyses reveal that habitat selection drives the speciation of Didymozoidae (Digenea) parasitizing Pacific and Atlantic bluefin tunas

I. Mladineo, N. J. Bott, B. F. Nowak and B. A. Block

1013

Applying predator-prey theory to modelling immune-mediated, within-host interspecific parasite interactions

Andy Fenton and Sarah E. Perkins

1027

Corrigendum

1039