## **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 0031–1820/2016 \$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:** *Eimeria tenella*: early-stage immature schizonts at 72 h (A) and 2nd generation large immature and mature schizonts at 84 h (B) in the lamina propria; 3rd generation schizonts in the epithelium of the crypts at 96 h (E). From Matsubayashi *et al.* Vol.139(12) pp. 1553–1561.

© Cambridge University Press 2016

University Printing House, Cambridge CB2 8BS, 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**

REVIEW ARTICLE		Fatal Theileria orientalis N2 genotype infection among Asian	
Diversity of extracellular proteins during the transition from the 'proto-apicomplexan' alveolates to the apicomplexan obligate parasites Thomas J. Templeton and Arnab Pain RESEARCH ARTICLES	1	water buffaloes (Bubalus bubalis) in a commercial dairy farm in Kerala, India Kulangara Vinodkumar, Varikkottil Shyma, Davis Kollannur Justin, Sivasailam Ashok, Joseph Parassery Anu, Kattilveetil Mini, Varikkottil Muhammedkutty, Suchithra Sasidharan and Sunanda Chullipparambil	69
Ultrastructure of Sarcocystis bertrami sarcocysts from a		Are parasite richness and abundance linked to prey species	
naturally infected donkey ( <i>Equus asinus</i> ) from Egypt J. P. Dubey, E. van Wilpe, S. K. Verma and M. Hilali	18	richness and individual feeding preferences in fish hosts? Alyssa R. Cirtwill, Daniel B. Stouffer, Robert Poulin and	7.5
Development of a versatile in vitro method for understanding		Clément Lagrue	75
the migration of Fasciola hepatica newly excysted juveniles Andres Garcia-Campos, Alan W. Baird and Grace Mulcahy	24	The reproductive effort of Lepeophtheirus pectoralis (Copepoda: Caligidae): insights into the egg production	
In vitro trichomonacidal activity and preliminary in silico chemometric studies of 5-nitroindazolin-3-one and		strategy of parasitic copepods D. G. Frade, M. J. Santos and F. I. Cavaleiro	87
<b>3-alkoxy-5-nitroindazole derivatives</b> Alexandra Ibáñez-Escribano, Juan José Nogal-Ruiz, Alicia Gómez-Barrio, Vicente J. Arán and José Antonio Escario	34	Characterization of the <i>Neospora caninum</i> NcROP40 and NcROP2Fam-1 rhoptry proteins during the tachyzoite lytic cycle	
Ultrastructure and molecular phylogeny of <i>Pleistophora</i> hyphessobryconis (Microsporidia) infecting hybrid jundiara (Leiarius marmoratus × Pseudoplatystoma reticulatum)		Iván Pastor-Fernández, Javier Regidor-Cerrillo, Elena Jiménezruiz, Gema Álvarez-García, Virginia Marugán-Hernández, Andrew Hemphill and Luis M. Ortega-Mora	97
in a Brazilian aquaculture facility Andrew D. Winters, Ingeborg M. Langohr, Marcos de A. Souza,		Missing links: testing the completeness of host-parasite checklists	
Edson M. Colodel, Mauro P. Soares and Mohamed Faisal	41	Robert Poulin, Anne A. Besson, Mathieu B. Morin and Haseeb S. Randhawa	114
The knockdown of each component of the cysteine proteinase-adhesin complex of <i>Entamoeba histolytica</i>		CORRIGENDUM	114
(EhCPADH) affects the expression of the other complex element as well as the <i>in vitro</i> and <i>in vivo</i> virulence		Intranasal vaccination with killed Leishmania amazonensis	
Ramón Ocádiz-Ruiz, Wendy Fonseca, Alicia S. Linford,		promastigotes antigen (LaAg) associated with CAF01	
Timothy P. Yoshino, Esther Orozco and Mario A. Rodríguez	50	adjuvant induces partial protection in BALB/c mice challenged with Leishmania (infantum) chagasi -	
Unmethylated CpG motifs in <i>Toxoplasma gondii</i> DNA induce TLR9- and IFN- $\beta$ -dependent expression of $\alpha$ -defensin-5 in intestinal epithelial cells		CORRIGENDUM  Janine Miranda Leal, Marcelle Mosquini, Luciana Polaco Covre,  Nataly Pescinalli Stagmiller, Rodrigo Ribeiro Rodrigues,	
Miguel H. Santamaria, Eugenia Perez Caballero and Ricardo S. Corral	60	Dennis Christensen, Herbet Leonel Demattos Guedes, Bartira Rossibergmann and Daniel Cláudio de Oliviera Gomes	123

