

The background of the advertisement is a dark, monochromatic image of several jellyfish. One large jellyfish is prominent in the upper center, with its bell and tentacles clearly visible. Other smaller jellyfish are scattered throughout the scene, some appearing as faint, ethereal shapes. The overall aesthetic is scientific and naturalistic.

Life Sciences

Books and Journals from
Cambridge University Press

Cambridge is one of the leading publishers in ecology and conservation biology and publishes high quality texts and research across the breadth of the life sciences, focusing particularly on animal behaviour, biological anthropology, evolutionary biology, computational and systems biology, as well as statistics and professional development titles for biologists.

We also have an extensive portfolio of established journals in agriculture, ecology and conservation, and animal science.

For further details visit:

cambridge.org/core-life-sciences

Cambridge
Core



CAMBRIDGE
UNIVERSITY PRESS



Medicine

Books and Journals from Cambridge University Press

The Cambridge Medicine programme focuses its book publishing in a defined set of core clinical areas with our great strength in the clinical brain sciences. Other specialties of significant focus include reproductive medicine/obstetrics and gynaecology, anaesthesia and critical care, emergency medicine and pathology.

Our journals programme covers a broad spectrum of medical disciplines including emergency and disaster medicine, epidemiology and infectious diseases, biomedical science, genetics, nutrition, mental health and psychiatry, and neuroscience.

We partner with many learned societies including The Society for Healthcare Epidemiology of America, the Neuroscience Education Institute, and the Royal College of Obstetricians and Gynaecologists.

For further details visit:

cambridge.org/core-medicine

Cambridge
Core



CAMBRIDGE
UNIVERSITY PRESS



Cambridge Core

The new home of
Cambridge Journals

cambridge.org/core

Cambridge **Core**



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 0031–1820/2017 \$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: Role of actin in sexual development in *Eimeria maxima*. From Frolich and Wallach, Vol. 142 (7) pp. 855–864.

© Cambridge University Press 2017

University Printing House, Cambridge CB2 8BS, United Kingdom
1 Liberty Plaza, Floor 20, New York, NY 10006, 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

RESEARCH ARTICLES

Validation of droplet digital PCR for the detection and absolute quantification of *Borrelia* DNA in *Ixodes scapularis* ticks

Jenny L. King, Ashley D. Smith, Elizabeth A. Mitchell and Michael S. Allen 359

Central European parasitic flatworms of the Cyclocoelidae Stossich, 1902 (Trematoda: Plagiorchiida): molecular and comparative morphological analysis suggests the reclassification of *Cyclocoelum obscurum* (Leidy, 1887) into the *Harrahium* Witenberg, 1926

Jiljí Sitko, Jiří Bizos and Petr Heneberg 368

Antioxidant defense of Nrf2 vs pro-inflammatory system of NF- κ B during the amoebic liver infection in hamster

Liseth R. Aldaba-Muruato, Martin H. Muñoz-Ortega, María Del R. Campos-Esparza, José R. Macías-Pérez, Nayeli A. Márquez-Muñoz, Ana G. Villalobos-Santos and Javier Ventura-Juárez 384

Diversity and distribution of avian haemosporidians in sub-Saharan Africa: an inter-regional biogeographic overview

Diana C. Outlaw, Johanna A. Harvey, Sergei V. Drovetski and Gary Voelker 394

***Leishmania donovani* development in *Phlebotomus argentipes*: comparison of promastigote- and amastigote-initiated infections**

Jovana Sadlova, Jitka Myskova, Tereza Lestínova, Jan Votýpka, Matthew Yeo and Petr Volf 403

The prevalence of *Aphanomyces astaci* in invasive signal crayfish from the UK and implications for native crayfish conservation

J. James, S. Nutbeam-Tuffs, J. Cable, A. Mrugala, N. Viñuela-Rodríguez, A. Petrušek and B. Oidtmann 411

Gregarine infection accelerates larval development of the cat flea *Ctenocephalides felis* (Bouché)

M. E. Alarcón, A. Jara-F., R. C. Briones, A. K. Dubey and C. H. Slamovits 419

Usefulness of gel filtration fraction as potential biomarker for neurocysticercosis in serum: towards a new diagnostic tool

D. S. Nunes, H. T. Gonzaga, V. S. Ribeiro, J. P. Cunha-Júnior and J. M. Costa-Cruz 426

Spatial and temporal variation in macroparasite communities of three-spined stickleback

Rebecca E. Young and Andrew D. C. MacColl 436

Genetic polymorphism and population structure of *Echinococcus ortleppi*

F. Addy, M. Wassermann, F. Banda, H. Mbaya, J. Aschenborn, O. Aschenborn, P. Koskei, G. Umhang, M. de La Rue, I. E. Elmahdi, U. Mackenstedt, P. Kern and T. Romig 450

Cross-reactivity of the 31 kDa antigen of *Angiostrongylus cantonensis* – Dealing with the immunodiagnosis of meningoencephalitis

Alessandra L. Morassutti, Lisa N. Rascoe, Sukwan Handali, Alexandre J. da Silva, Patricia P. Wilkins and Carlos Graeff-Teixeira 459

Smelling the future: subtle life-history adjustments in response to environmental conditions and perceived transmission opportunities in a trematode

C. Lagrue, R. Rinnevall and R. Poulin 464

Ectoparasites of small-mammals: determinants of community structure in South American savannah

J. Sponchiado, G. L. Melo, T. F. Martins, F. S. Krawczak, F. C. Jacinavicius, M. B. Labruna, D. M. Barros-Battesti and N. C. Cáceres 475

Pathological and phylogenetic characterization of *Amphibiothecum* sp. infection in an isolated amphibian (*Lissotriton helveticus*) population on the island of Rum (Scotland)

Caterina Fiegna, Charlotte L. Clarke, Darren J. Shaw, Johanna L. Baily, Frances C. Clare, Alexandra Gray, Trenton W. J. Garner and Anna L. Meredith 484

Description and experimental transmission of *Tetracapsuloides vermiformis* n. sp. (Cnidaria: Myxozoa) and guidelines for describing malacosporan species including reinstatement of *Buddenbrockia bryozoides* n. comb. (syn. *Tetracapsula bryozoides*)

Sneha Patra, Ashlie Hartigan, David J. Morris, Alena Kodádková and Astrid S. Holzer 497

Murine models susceptibility to distinct *Trypanosoma cruzi* I genotypes infection

Cielo M. León, Marleny Montilla, Ricardo Vanegas, María Castillo, Edgar Parra and Juan David Ramírez 512

Oxidative stress and changes in adenosine deaminase activity of cattle experimentally infected by *Fasciola hepatica*

Aleksandro S. da Silva, Matheus D. Baldissera, Nathieli B. Bottari, Matheus E. Gabriel, Leandro A. Rhoden, Manoela M. Piva, Ricardo Christ, Fernanda A. Stedille, Anderson Gris, Vera M. Morsch, Maria Rosa Scheitinger and Ricardo E. Mendes 520

***Plasmodium knowlesi* and human malaria parasites in Khan Phu, Vietnam: Gametocyte production in humans and frequent co-infection of mosquitoes**

Y. Maeno, R. Culleton, N. T. Quang, S. Kawai, R. P. Marchand and S. Nakazawa 527

Oligopeptidase B and B2: comparative modelling and virtual screening as searching tools for new antileishmanial compounds

Ana Carolina R. Sodero, Ana Carolina G. O. Dos Santos, Juliana F. R. E. Mello, Jéssica B. de Jesus, Alessandra M. T. de Souza, Maria Isabel C. Rodrigues, Salvatore G. de Simone, Carlos R. Rodrigues and Herbert L. de Matos Guedes 536

***Leishmania infantum*: illness, transmission profile and risk factors for asymptomatic infection in an endemic metropolis in Brazil**

Letícia Helena Dos Santos Marques, Iara Caixeta Marques da Rocha, Ilka Afonso Reis, Gisele Macedo Rodrigues da Cunha, Edward Oliveira, Thais Ribeiro Pfeilsticker, Valdelaine Etelvina Miranda de Araújo, Maria Helena Franco Morais, Ana Rabello and Mariângela Carneiro 546

The relationship of endotoxaemia to peripheral and central nervous system inflammatory responses in Human African Trypanosomiasis

Lorna MacLean, Eitayb A. Aboubaker, Peter G. E. Kennedy and Jeremy M. Sternberg 557