

# PARASITOLOGY

# PARASITOLOGY

(*Founded by G. H. F. Nuttall, F.R.S.*)

## EDITORS

F. E. G. COX *and* C. ARME

## EDITORIAL ASSISTANT

M. ELISABETH PAINTER, Ph.D.

## ADVISORY BOARD

L. G. GOODWIN, F.R.S. (*Chairman*)

R. ANDERSON, F.R.S.

J. R. BAKER

J. BARRETT

A. E. BUTTERWORTH

ELIZABETH U. CANNING

L. H. CHAPPELL\*

D. W. T. CROMPTON

D. I. GIBSON

R. E. HOWELLS

C. R. KENNEDY

A. E. KEYMER

ANN M. LACKIE

D. L. LEE

D. J. McLAREN

D. P. McMANUS

D. H. MOLYNEUX

B. A. NEWTON

BRIDGET M. OGILVIE

D. ROLLINSON

M. ELAINE ROSE

S. R. SMITHERS

V. R. SOUTHGATE\*

R. C. TINSLEY

K. VICKERMAN

F.R.S.

D. WAKELIN

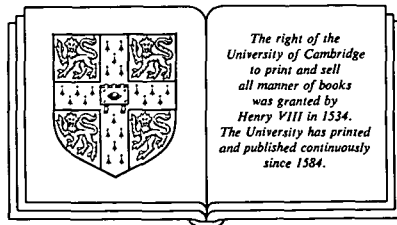
H. H. WILLIAMS

R. A. WILSON

P. J. WHITFIELD

\* Representing the British Society for Parasitology.

VOLUME 95, 1987



CAMBRIDGE UNIVERSITY PRESS

*Cambridge*

*New York New Rochelle Melbourne Sydney*

Published by the Press Syndicate of the University of Cambridge  
The Pitt Building, Trumpington Street, Cambridge CB2 1RP  
32 East 57th Street, New York, NY 10022  
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press, 1987

Printed in Great Britain by the  
University Press, Cambridge

# CONTENTS

(All rights reserved)

## PART 1 AUGUST 1987

	PAGE
KUKLA, B. A., MAJIWA, P. A. O., YOUNG, J. R., MOLOO, S. K. and OLE-MOIYOI, O. Use of species-specific DNA probes for detection and identification of trypanosome infection in tsetse flies . . . . .	1
HILL, J. The activity of drug combinations against established infections of rodent malaria . . . . .	17
CARTER, E. H., SUHRBIER, A., BECKERS, P. J. A. and SINDEN, R. E. The <i>in vitro</i> cultivation of <i>P. falciparum</i> ookinetes, and their enrichment on Nycodenz® density gradients . . . . .	25
ALFIERI, SILVIA C., ZILBERFARB, V. and RABINOVITCH, M. Destruction of <i>Leishmania mexicana amazonensis</i> amastigotes by leucine methyl ester: protection by other amino acid esters . . . . .	31
ROGERS, M. V. and McLAREN, DIANE, J. Analysis and comparison of immune reactivity in guinea-pigs immunized with equivalent numbers of normal or radiation-attenuated cercariae of <i>Schistosoma mansoni</i> . . . . .	43
CRIADO FORNELIO, A., RODRIGUEZ CAABEIRO, F. and JIMINEZ GONZALEZ, A. The mode of action of some benzimidazole drugs on <i>Trichinella spiralis</i> . . . . .	61
JEFFS, S. A. and ARME, C. <i>Echinococcus granulosus</i> : specificity of amino acid transport systems in protoscoleces . . . . .	71
RATH, E. A. and WALKEY, M. Fatty acid and cholesterol synthesis in mice infected with the tapeworm <i>Hymenolepis microstoma</i> . . . . .	79
HURD, HILARY and WEAVER, R. J. Evidence against the hypothesis that metacestodes of <i>Hymenolepis diminuta</i> inhibit corpora allata functioning in the intermediate host, <i>Tenebrio molitor</i> . . . . .	93
KINO, H. and KENNEDY, C. R. Differences in biological characteristics of two strains of the cestode <i>Hymenolepis diminuta</i> . . . . .	97
SCOTT, MARILYN E. Regulation of mouse colony abundance by <i>Heligmosomoides polygyrus</i> . . . . .	111
PRESTON, CHRISTINE M. and BIRD, A. F. Physiological and morphological changes associated with recovery from anabiosis in the dauer larva of the nematode <i>Anquina agrostis</i> . . . . .	125
WILLIAMS, J. C., KNOX, J. W., MARBURY, K. S., KIMBALL, M. D., BAUMANN, B. A. and SNIDER, T. G. The epidemiology of <i>Ostertagia ostertagi</i> and other gastrointestinal nematodes of cattle in Louisiana . . . . .	135
EL SINNARY, K. A., BIANCO, A. E. and WILLIAMS, J. F. Implantation of adult <i>Onchocerca gutturosa</i> into laboratory rodents . . . . .	155
SMITH, G. The relationship between the density of <i>Fasciola hepatica</i> miracidia and the net rate of miracidial infections in <i>Lymnaea truncatula</i> . . . . .	159

- JENKINS, D. C., TOPLEY, P. and RAPSON, E. B. *Fasciola hepatica in vitro*: increased susceptibility to fasciolicides in a defined serum-free medium . . . . . 165

*Trends and Perspectives*

- WILLIAMS, H. H., COLIN, JUDITH, A. and HALVORSEN, O. Biology of gyro-cotylideans with emphasis on reproduction population ecology and phylogeny . . . . . 173

PART 2 OCTOBER 1987

- ROCK, E. P., MARSH, K., SAUL, A. J., WELLEMS, T. E., TAYLOR, DIANE W., MALOY, W. L. and HOWARD, R. J. Comparative analysis of the *Plasmodium falciparum* histidine-rich proteins HRP-I, HRP-II and HRP-III in malaria parasites of diverse origin . . . . . 209
- LI, J. L. and LI, Y. J. Inhibitory, opsonic and cytotoxic activities of monoclonal antibodies against asexual erythrocytic stages of *Plasmodium falciparum* . . . . . 229
- RUPPEL, A., BRETERNITZ, R. and LUTZ, F. *Schistosoma mansoni*: stage-dependent membrane vesiculation and parasite killing induced by a cytotoxin from *Pseudomonas aeruginosa* . . . . . 241
- KELLY, C., HAGAN, P., KNIGHT, M., HODGSON, J., SIMPSON, A. J. G., HACKETT, F., WILKINS, H. A. and SMITHERS, S. R. Surface and species-specific antigens of *Schistosoma haematobium* . . . . . 253
- SHAW, M. K. and ERASMUS, D. A. *Biomphalaria glabrata*: changes in calcium reserves following parasitism by larval *Schistosoma mansoni* . . . . . 267
- LIU, M. K. and PEARSON, T. W. Detection of circulating trypanosomal antigens by double antibody ELISA using antibodies to procyclic trypanosomes . . . . . 277
- KNOWLES, G., BLACK, S. J. and WHITELAW, D. D. Peptidase in the plasma of mice infected with *Trypanosoma brucei brucei* . . . . . 291
- KENNEDY, C. R. and MORIARTY, C. C. Co-existence of congeneric species of Acanthocephala: *Acanthocephalus lucii* and *A. anguillae* in eels *Anguilla anguilla* in Ireland . . . . . 301
- BRAILS福德, T. J. and MAPES, C. J. Comparisons of *Heligomosomoides polygyrus* primary infection in protein-deficient and well-nourished mice . . . . . 311
- HASWELL-ELKINS, M. R., ELKINS, D. B. and ANDERSON, R. M. Evidence for predisposition in humans to infection with *Ascaris*, hookworm, *Enterobius* and *Trichuris* in a South Indian fishing community . . . . . 323
- HASWELL-ELKINS, M. R., ELKINS, D. B., MANJULA, K., MICHAEL, E. and ANDERSON, R. M. The distribution and abundance of *Enterobius vermicularis* in a South Indian fishing community . . . . . 339
- MÉNARD, L. and SCOTT, M. E. Hatching and survival characteristics of *Cyathocotyle bushiensis* Khan 1962 (Digenea) eggs and miracidia . . . . . 355
- GREENFELL, B. T., SMITH, G. and ANDERSON, R. M. The regulation of *Ostertagia ostertagi* populations in calves: the effect of past and current experience of infection on proportional establishment and parasite survival . . . . . 363
- SMITH, G., GREENFELL, B. T. and ANDERSON, R. M. The regulation of *Ostertagia ostertagi* populations in calves: density-dependent control of fecundity . . . . . 373

GRENFELL, B. T., SMITH, G. and ANDERSON, R. M. A mathematical model of the population biology of <i>Ostertagia ostertagi</i> in calves and yearlings . . . . .	389
SMITH, G., GRENFELL, B. T., ANDERSON, R. M. and BEDDINGTON, J. Population biology of <i>Ostertagia ostertagi</i> and anthelmintic strategies against ostertagiasis in calves. . . . .	407
SCHOTS, A., BAKKER, J., GOMMERS, F. J., BOUWMAN-SMITS, L. and EGBERTS, E. Serological differentiation of the potato-cyst nematodes <i>Globodera pallida</i> and <i>G. rostochiensis</i> : partial purification of species-specific proteins . . . . .	421

*Trends and Perspectives*

GIBSON, D. I. Questions in digenean systematics and evolution . . . . .	429
---	-----

PART 3 DECEMBER 1987

GARDNER, R. A. and MOLYNEUX, D. H. <i>Babesia vesperuginis</i> : natural and experimental infections in British bats (Microchiroptera) . . . . .	461
VOLTZ, A., RICHARD, J. and PESSON, B. A genetic comparison between natural and laboratory strains of <i>Echinostoma</i> (Trematoda) by isoenzymatic analysis . . . . .	471
WISHER, M. H. and ROSE, M. E. <i>Eimeria tenella</i> sporozoites: the method of excystation affects the surface membrane proteins . . . . .	479
PROBERT, A. J. and AWAD, A. H. H. Scanning electron microscopy of the tegument of adult <i>S. margrebowiei</i> Le Roux, 1933 with particular reference to the structure of the tubercles. . . . .	491
RICHARDS, C. S. and MINCHELLA, D. J. Transient non-susceptibility to <i>Schistosoma mansoni</i> associated with atrial amoebocytic accumulations in the snail host <i>Biomphalaria glabrata</i> . . . . .	499
MURARE, H. M. and DOENHOFF, M. J. Parasitological observations of <i>Schistosoma bovis</i> in normal and T-cell deprived mice . . . . .	507
MURARE, H. M., AGNEW, ALISON, BALTZ, MARILYN, LUCAS, S. B. and DOENHOFF, M. J. The response of <i>Schistosoma bovis</i> to normal and T-cell deprived mice . . . . .	517
ROGER, M. and VIENS, P. <i>Trypanosoma musculi</i> : influence of uric acid on <i>in vitro</i> formation of metacyclic trypomastigotes . . . . .	531
MOLOO, S. K., KUTUZA, S. B. and DESAI, J. Comparative study on the infection rates of different <i>Glossina</i> species for East and West African <i>Trypanosoma vivax</i> stocks . . . . .	537
MAJIWA, P. A. O. and WEBSTER, P. A repetitive deoxyribonucleic acid sequence distinguishes <i>Trypanosoma simiae</i> from <i>T. congolense</i> . . . . .	543
ALMOND, N. M., WORMS, M. J., HARNETT, W. and PARKHOUSE, R. M. E. Variation in class-specific humoral immune responses of different mouse strains to microfilariae of <i>Dipetalonema viteae</i> . . . . .	559
BEHNKE, J. M., WILLIAMS, DIANE J., HANNAH, J. and PRITCHARD, D. I. Immunological relationships during primary infection with <i>Heligmosomoides polygyrus</i> ( <i>Nematospairoides dubius</i> ): the capacity of adult worms to survive following transplantation to recipient mice . . . . .	569

UBEIRA, F. M., LEIRO, J., SANTAMARINA, M. T. and SANMARTIN-DURAN, M. L. Modulation of the anti-phosphorylcholine immune response during <i>Trichinella spiralis</i> infections in mice . . . . .	583
ALLSOPP, B. A., JONES, A., ALLSOPP, M. T. E. P., NEWTON, S. D. and MACPHERSON, C. N. L. Interspecific characterization of several taeniid cestodes by isoenzyme analysis using isoelectric focusing in agarose. . . . .	593
TAREN, D. L., NESHEIM, M. C., CROMPTON, D. W. T., HOLLAND, CELIA V., BARBEAU, IRMA, RIVERA, GLORIA, SANJUR, DIVA, TIFFANY, JEAN and TUCKER, KATHERINE. Contributions of ascariasis to poor nutritional status in children from Chiriqui Province, Republic of Panama . . . . .	603
HOLLAND, CELIA V., CROMPTON, D. W. T., TAREN, D. L., NESHEIM, M. C., SANJUR, DIVA, BARBEAU, IRMA and TUCKER, KATHERINE. <i>Ascaris lumbricoides</i> infection in pre-school children from Chiriqui Province, Panama . . . . .	615
<i>Trends and Perspectives</i>	
BUNDY, D. A. P. and GOLDEN, M. H. N. The impact of host nutrition on gastrointestinal helminth populations . . . . .	623
BOOK REVIEWS . . . . .	637
<i>Proceedings of the British Society for Parasitology</i> . . . . .	641

## 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, 27 Congress Street, Salem, Mass. 01970. 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 \$5.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0031–1820/87 \$5.00 + .00.

**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.



# PARASITOLOGY

Volume 95, Part 3, December 1987

## CONTENTS

	PAGE
GARDNER, R. A. and MOLYNEUX, D. H. <i>Babesia vesperuginis</i> : natural and experimental infections in British bats (Microchiroptera)	461
VOLTZ, A., RICHARD, J. and PESSON, B. A genetic comparison between natural and laboratory strains of <i>Echinostoma</i> (Trematoda) by isoenzymatic analysis	471
WISHER, M. H. and ROSE, M. E. <i>Eimeria tenella</i> sporozoites: the method of excystation affects the surface membrane proteins	479
PROBERT, A. J. and AWAD, A. H. H. Scanning electron microscopy of the tegument of adult <i>S. margrebowiei</i> Le Roux, 1933 with particular reference to the structure of the tubercles	491
RICHARDS, C. S. and MINCHELLA, D. J. Transient non-susceptibility to <i>Schistosoma mansoni</i> associated with atrial amoebocytic accumulations in the snail host <i>Biomphalaria glabrata</i>	499
MURARE, H. M. and DOENHOFF, M. J. Parasitological observations of <i>Schistosoma bovis</i> in normal and T-cell deprived mice	507
MURARE, H. M., AGNEW, ALISON, BALTZ, MARILYN, LUCAS, S. B. and DOENHOFF, M. J. The response of <i>Schistosoma bovis</i> in normal and T-cell deprived mice	517
ROGER, M. and VIENS, P. <i>Trypanosoma musculi</i> : influence of uric acid on <i>in vitro</i> formation of metacyclic trypomastigotes	531
MOLOO, S. K., KUTUZA, S. B. and DESAI, J. Comparative study on the infection rates of different <i>Glossina</i> species for East and West African <i>Trypanosoma vivax</i> stocks	537
MAJIWA, P. A. O. and WEBSTER, P. A repetitive deoxyribonucleic acid sequence distinguishes <i>Trypanosoma simiae</i> from <i>T. congolense</i>	543
ALMOND, N. M., WORMS, M. J., HARNETT, W. and PARKHOUSE, R. M. E. Variation in class-specific humoral immune response of different mouse strains to microfilariae of <i>Dipetalonema viteae</i>	559
BEHNKE, J. M., WILLIAMS, DIANE J., HANNAH, J. and PRITCHARD, D. I. Immunological relationships during primary infection with <i>Heligmosomoides polygyrus</i> ( <i>Nematospiroides dubius</i> ): the capacity of adult worms to survive following transplantation to recipient mice	569
UBEIRA, F. M., LEIRO, J., SANTAMARINA, M. T. and SANMARTIN-DURAN, M. L. Modulation of the anti-phosphorylcholine immune response during <i>Trichinella spiralis</i> infections in mice	583
ALLSOPP, B. A., JONES, A., ALLSOPP, M. T. E. P., NEWTON, S. D. and MACPHERSON, C. N. L. Interspecific characterization of several taeniid cestodes by isoenzyme analysis using isoelectric focusing in agarose	593
TAREN, D. L., NESHEIM, M. C., CROMPTON, D. W. T., HOLLAND, CELIA V., BARBEAU, IRMA, RIVERA, GLORIA, SANJUR, DIVA, TIFFANY, JEAN and TUCKER, KATHERINE. Contributions of ascariasis to poor nutritional status in children from Chiriqui Province, Republic of Panama	603
HOLLAND, CELIA V., CROMPTON, D. W. T., TAREN, D. L., NESHEIM, M. C., SANJUR, DIVA, BARBEAU, IRMA and TUCKER, KATHERINE. <i>Ascaris lumbricoides</i> infection in pre-school children from Chiriqui Province, Panama	615
<i>Trends and Perspectives</i>	
BUNDY, D. A. P. and GOLDEN, M. H. N. The impact of host nutrition on gastrointestinal helminth populations	623
BOOK REVIEWS	637
<i>Proceedings of the British Society for Parasitology</i>	641

© Cambridge University Press 1987

The Pitt Building, Trumpington Street, Cambridge CB2 1RP  
32 East 57th Street, New York, NY 10022, USA  
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Printed in Great Britain by the University Press, Cambridge