

Parasitology

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. M. ANDERSON, F.R.S.

J. R. BAKER

D. C. BARKER

J. BARRETT

D. A. P. BUNDY

E. U. CANNING

L. H. CHAPPELL*

D. W. T. CROMPTON

D. I. GIBSON

D. W. HALTON

R. E. HOWELLS

C. R. KENNEDY

M. W. KENNEDY

D. L. LEE

D. J. McLAREN

D. P. McMANUS

D. H. MOLYNEUX

P. W. PAPPAS

D. ROLLINSON

M. E. SCOTT

A. SHER

V. R. SOUTHGATE*

R. C. TINSLEY

K. VICKERMAN, F.R.S.

D. WAKELIN

P. J. WHITFIELD

R. A. WILSON

M. E. J. WOOLHOUSE

* Representing the British Society for Parasitology.



CAMBRIDGE
UNIVERSITY PRESS

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press, 1994

Printed in Great Britain by the
University Press Cambridge

CONTENTS

PART 1 JANUARY 1994

- BATES, P. A. Complete developmental cycle of *Leishmania mexicana* in axenic culture 1
- EBERT, D. Genetic differences in the interactions of the microsporidian parasite and four clones of its cyclically parthenogenetic host 11
- LOKER, E. S., COUCH, L. and HERTEL, L. A. Elevated agglutination titres in plasma of *Biomphalaria glabrata* exposed to *Echinostoma paraensei*: characterization and functional relevance of a trematode-induced response 17
- SCHRAG, S. J. and ROLLINSON, D. Effects of *Schistosoma haematobium* infection on reproductive success and male outcrossing ability in the simultaneous hermaphrodite, *Bulinus truncatus* (Gastropoda: Planorbidae) 27
- LEVY-HOLTZMAN, R. and SCHECHTER, I. Schistosome extracts with heat shock factor activity revealed by the gel shift assay 35
- FANTAPPIÉ, M. R. and RUMJANEK, F. D. Characterization of a HMG2-like protein from *Schistosoma mansoni* 43
- BEN MILED, L., DELLAGI, K., BERNARDI, G., MELROSE, T. R., DARGHOUTH, M., BOUATTOUR, A., KINNAIRD, J., SHIELS, B., TAIT, A. and BROWN, C. G. D. Genomic and phenotypic diversity of Tunisian *Theileria annulata* isolates 51
- FAKAE, B. B., HARRISON, L. J. S., ROSS, C. A. and SEWELL, M. M. H. *Heligmosomoides polygyrus* and *Trypanosoma congolense* infections in mice: a laboratory model for concurrent gastrointestinal nematode and trypanosome infections 61
- ROSE, M. E., WAKELIN, D. and HESKETH, P. Interactions between infections with *Eimeria* spp. and *Trichinella spiralis* in inbred mice 69
- CHAN, L., BUNDY, D. A. P. and KAN, S. P. Genetic relatedness as a determinant of predisposition to *Ascaris lumbricoides* and *Trichuris trichiura* infection 77
- HOLDEN-DYE, L. and WALKER, R. J. Characterization of identifiable neurones in the head ganglia of the parasitic nematode *Ascaris suum*: a comparison with central neurones of *Caenorhabditis elegans* 81
- BROWNLEE, D. J. A., FAIRWEATHER, I., JOHNSTON, C. F. and SHAW, C. Immunocytochemical demonstration of peptidergic and serotonergic components in the enteric nervous system of the roundworm, *Ascaris suum* (Nematoda, Ascaroidea) 89
- VÄINÖLÄ, R., VALTONEN, E. T. and GIBSON, D. I. Molecular systematics in the acanthocephalan genus *Echinorhynchus* (*sensu lato*) in northern Europe 105
- BASÁÑEZ, M. G., BOUSSINESQ, M., PROD'HON, J., FRONTADO, H., VILLAMIZAR, N. J., MEDLEY, G. F. and ANDERSON, R. M. Density-dependent processes in the transmission of human onchocerciasis: intensity of microfilariae in the skin and their uptake by the simuliid host 115

PART 2 FEBRUARY 1994

- BAKER, D. A., DARAMOLA, O., MCCROSSAN, M. V., HARMER, J. and TARGETT, G. A. T. Subcellular localization of Pfs16 a *Plasmodium falciparum* gametocyte antigen 129
- TOMAVO, S., COUVREUR, G., LERICHE, M. A., SADAK, A., ACHBAROU, A., FORTIER, B. and DUBREMETZ, J. F. Immunolocalization and characterization of the low molecular weight antigen (4–5 kDa) of *Toxoplasma gondii* that elicits an early IgM response upon primary infection 139
- ALLSOPP, M. T. E. P., CAVALIER-SMITH, T., DEWAAL, D. T. and ALLSOPP, B. A. Phylogeny and evolution of the piroplasm 147
- CAMACHO, M., TARRAB-HAZDAI, R., ESPINOZA, B., ARNON, R. and AGNEW, A. The amount of acetylcholinesterase on the parasite surface reflects the differential sensitivity of schistosome species to metrifonate 153

HIDE, G., GRAHAM, T., BUCHANAN, N., TAIT, A. and KEITH, K. <i>Trypanosoma brucei</i> : characterization of protein kinases that are capable of autophosphorylation <i>in vitro</i>	161
HARRIS, P. D., JANSEN, P. A. and BAKKE, T. A. The population age structure and reproductive biology of <i>Gyrodactylus salaris</i> Malmberg (Monogenea)	167
TOCQUE, K. and TINSLEY, R. C. The relationship between <i>Pseudodiplorchis americanus</i> (Monogenea) density and host resources under controlled environmental conditions	175
TOCQUE, K. and TINSLEY, R. C. Survival of <i>Pseudodiplorchis americanus</i> (Monogenea) under controlled environmental conditions	185
KO, R. C., FAN, L., LEE, D. L. and COMPTON, H. Changes in host muscles induced by excretory/secretory products of larval <i>Trichinella spiralis</i> and <i>Trichinella pseudospiralis</i>	195
GREWAL, P. S., LEWIS, E. E., GAUGLER, R. and CAMPBELL, J. F. Host finding behaviour as a predictor of foraging strategy in entomopathogenic nematodes	207
ROSEN, R., SAN, M. L., DENTON, M. E., WOLFE, J. M. and UGLEM, G. L. The rapid development of the glucose transport system in the excysted metacystode of <i>Hymenolepis diminuta</i>	217
WASTLING, J. M. and CHAPPELL, L. H. Cyclosporin A: drug treatment <i>in vivo</i> affects the kinetics of [¹⁴ C]glucose transport in <i>Hymenolepis microstoma in vitro</i>	223
FRANKS, C. J., HOLDEN-DYE, L., WILLIAMS, R. G., PANG, F. Y. and WALKER, R. J. A nematode FMRF amide-like peptide, SDPNFLRF amide (PF1), relaxes the dorsal muscle strip preparation of <i>Ascaris suum</i>	229
 PART 3 APRIL 1994	
MITTAL, V., BHATTACHARYA, A. and BHATTACHARYA, S. Isolation and characterization of a species-specific multicopy DNA sequence from <i>Entamoeba histolytica</i>	237
MAUROIS, P., DELCOURT, PH., GUEUX, E. and RAYSSIGUIER, Y. Magnesium deficiency protects against <i>Babesia hylomysci</i> and mice become resistant to rechallenge with the parasite regardless of diet fed	245
ZIDOVETZKI, R., SHERMAN, I. W., PRUDHOMME, J. and CRAWFORD, J. Inhibition of <i>Plasmodium falciparum</i> lysophospholipase by anti-malarial drugs and sulphhydryl reagents	249
CRANDALL, I. and SHERMAN, I. W. Cytoadherence-related neoantigens on <i>Plasmodium falciparum</i> (human malaria)-infected human erythrocytes result from the exposure of normally cryptic regions of the band 3 protein	257
DOURY, J.-C., BONNEFOY, S., ROGER, N., DUBREMETZ, J.-F. and MERCEREAU-PUIJALON, O. Analysis of the high molecular weight rhoptry complex of <i>Plasmodium falciparum</i> using monoclonal antibodies	269
BONHOMME, A., THIRION, C., BOULANGER, F., CHARTON, F., BURLET, H., PINON, J. M. and ALIX, A. J. P. <i>Toxoplasma gondii</i> -structure variations of the antigen P30	281
RAM, D., ROMANO, B. and SCHECHTER, I. Immunochemical studies on the cercarial-specific calcium binding protein of <i>Schistosoma mansoni</i>	289
SOLIS-SOTO, J. M. and DE JONG BRINK, M. Immunocytochemical study on biologically active neurosubstances in daughter sporocysts and cercariae of <i>Trichobilharzia ocellata</i> and <i>Schistosoma mansoni</i>	301
MAJIWA, P. A. O., THATTHI, R., MOLOO, S. K., NYEKO, J. H. P., OTIENO, L. H. and MALOO, S. Detection of trypanosome infections in the saliva of tsetse flies and buffy-coat samples from antigenaemic but aparasitaemic cattle	313
LUJÁN, H. D. and BRONIA, D. H. Intermembrane lipid transfer during <i>Trypanosoma cruzi</i> -induced erythrocyte membrane destabilization	323
NAGESWARAN, C., CRAIG, P. S. and DEVANEY, E. Coproantigen detection in rats experimentally infected with <i>Strongyloides ratti</i>	335
BALBUENA, J. A., ASPHOLM, P. E., ANDERSEN, K. I. and BJØRGE, A. Lung-worms (Nematoda: Pseudaliidae) of harbour porpoises (<i>Phocoena phocoena</i>) in Norwegian waters: patterns of colonization	343

SCHALLIG, H. D. F. H., VAN LEEUWEN, M. A. W. and HENDRIKX, W. M. L. Immune responses of Texel sheep to excretory/secretory products of adult <i>Haemonchus contortus</i>	351
KONG, Y., CHUNG, Y.-B., CHO, S.-Y., CHOI, S.-H. and KANG, S.-Y. Characterization of three neutral proteases of <i>Spirometra mansoni</i> plerocercoid	359
Corrigendum	369

PART 4 MAY 1994

GABAY, T., KRUGLIAK, M., SHALMIEV, G. and GINSBURG, H. Inhibition by anti-malarial drugs of haemoglobin denaturation and iron release in acidified red blood cell lysates—a possible mechanism of their anti-malarial effect?	371
FOWLER, R. E., BILLINGSLEY, P. F., PUDNEY, M. and SINDEN, R. E. Inhibitory action of the anti-malarial compound atovaquone (566C80) against <i>Plasmodium berghei</i> ANKA in the mosquito, <i>Anopheles stephensi</i>	383
CRANDALL, I. and SHERMAN, I. W. Antibodies to synthetic peptides based on band 3 motifs react specifically with <i>Plasmodium falciparum</i> (human malaria)-infected erythrocytes and block cytoadherence	389
CAPPAL, R., MORRIS, L., AEBISCHER, T., BACIC, A., CURTIS, J. M., KELLEHER, M., MCLEOD, K. S., MOODY, S. F., OSBORN, A. H. and HANDMAN, E. Ricin-resistant mutants of <i>Leishmania major</i> which express modified lipophosphoglycan remain infective for mice	397
WEBSTER, J. P. Prevalence and transmission of <i>Toxoplasma gondii</i> in wild brown rats, <i>Rattus norvegicus</i>	407
RANDOLPH, S. E. Density-dependent acquired resistance to ticks in natural hosts, independent of concurrent infection with <i>Babesia microti</i>	413
ODENING, K., STOLTE, M., WALTER, G., BOCKHARDT, I. and JAKOB, W. Sarcocysts (<i>Sarcocystis</i> sp.: Sporozoa) in the European badger, <i>Meles meles</i>	421
DAY, T. A., BENNETT, J. L. and PAX, R. A. Serotonin and its requirement for maintenance of contractility in muscle fibres isolated from <i>Schistosoma mansoni</i>	425
KÖSTER, B. and STRAND, M. <i>Schistosoma mansoni</i> : immunolocalization of two different fucose-containing carbohydrate epitopes	433
JACKSON, J. A. and TINSLEY, R. C. Infrapopulation dynamics of <i>Gyrodactylus gallieni</i> (Monogenea: Gyrodactylidae)	447
FOSTER, N., DEAN, E. J. and LEE, D. L. The effect of homogenates and excretory/secretory products of <i>Nippostrongylus brasiliensis</i> and of acetylcholinesterase on the amplitude and frequency of contraction of uninfected rat intestine <i>in vitro</i>	453
WAHID, F. N., BEHNKE, J. M., GRENCIS, R. K., ELSE, K. J. and BEN-SMITH, A. W. Immunological relationships during primary infection with <i>Heligmosomoides polygyrus</i> : Th2 cytokines and primary response phenotype	461
KEARNS, J. Y., HURD, H. and PULLIN, A. S. Effect of metacystodes of <i>Hymenolepis diminuta</i> on storage and circulating carbohydrates in the intermediate host, <i>Tenebrio molitor</i>	473
DAVENPORT, T. R. B., EAVES, L. A., HAYES, T. K., LEE, D. L. and ISAAC, R. E. The detection of AKH/HrTH-like peptides in <i>Ascaridia galli</i> and <i>Ascaris suum</i> using an insect hyperglycaemic bioassay	479

PART 5 JUNE 1994

BARNARD, C. J., BEHNKE, J. M. and SEWELL, J. Social behaviour and susceptibility to infection in house mice (<i>Mus musculus</i>): effects of group size, aggressive behaviour and status-related hormonal responses prior to infection on resistance to <i>Babesia microti</i>	487
---	-----

GRAAT, E. A. M., HENKEN, A. M., PLOEGER, H. W., NOORDHUIZEN, J. P. T. M. and VERTOMMEN, M. H. Rate and course of sporulation of oocysts of <i>Eimeria acervulina</i> under different environmental conditions	497
HENKEN, A. M., PLOEGER, H. W., GRAAT, E. A. M. and CARPENTER, T. E. Description of a simulation model for the population dynamics of <i>Eimeria acervulina</i> infection in broilers	503
HENKEN, A. M., GRAAT, E. A. M., PLOEGER, H. W. and CARPENTER, T. E. Description of a model to simulate effects of <i>Eimeria acervulina</i> infection on broiler production	513
LIESHOUT, VAN L., DE JONGE, N., EL-MASRY, N., MANSOUR, M. M., BASSILY, S., KRIJGER, F. W. and DEELDER, A. M. Monitoring the efficacy of different doses of praziquantel by quantification of circulating antigens in serum and urine of schistomiasis patients	519
KHALIFE, J., LIU, J. L., PIERCE, R., PORCHET, E., GODIN, C. and CAPRON, A. Characterization and localization of <i>Schistosoma mansoni</i> calreticulin Sm58	527
KHALIFE, J., PIERCE, R. J., GODIN, C. and CAPRON, A. Molecular characterization of two <i>Schistosoma mansoni</i> proteins sharing common motifs with the vif protein of HIV-1	533
STAGG, D. A., BISHOP, R. P., MORZARIA, S. P., SHAW, M. K., WESONGA, D., ORINDA, G. O., GROOTENHUIS, J. G., MOLYNEUX, D. H. and YOUNG, A. S. Characterization of <i>Theileria parva</i> which infects waterbuck (<i>Kobus defassa</i>)	543
STITT, A. W. and FAIRWEATHER, I. The effect of sulphoxide metabolite of triclabendazole ('Fasinex') on the tegument of mature and immature stages of the liver fluke, <i>Fasciola hepatica</i>	555
JAENIKE, J. Aggregations of nematode parasites within <i>Drosophila</i> : proximate causes	569
GRIFFITHS, G. and PRITCHARD, D. I. Purification and biochemical characterization of acetylcholinesterase (AChE) from the excretory/secretory products of <i>Trichostrongylus colubriformis</i>	579
BROWNLEE, D. J. A., BRENNAN, G. P., HALTON, D. W., FAIRWEATHER, I. and SHAW, C. Ultrastructural localization of pancreatic polypeptide- and FMRFamide immunoreactivities within the central nervous system of the nematode, <i>Ascaris suum</i> (Nematoda: Ascaroidea)	587
HAWTHORNE, S. J., HALTON, D. W. and WALKER, B. Identification and characterization of the cysteine and serine proteinases of the trematode, <i>Haplometra cylindracea</i> and determination of their haemoglobinase activity	595

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. 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 0031-1820/94 \$5.00 + .00.

Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions.

ISI Tear Sheet Service. 3051 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.

© Cambridge University Press 1994

The Pitt Building, Trumpington Street, Cambridge CB2 1RP
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Printed in Great Britain by the University Press, Cambridge

Parasitology

CONTENTS

	PAGE
Barnard, C. J., Behnke, J. M. and Sewell, J. Social behaviour and susceptibility to infection in house mice (<i>Mus musculus</i>): effects of group size, aggressive behaviour and status-related hormonal responses prior to infection on resistance to <i>Babesia microti</i>	487
Graat, E. A. M., Henken, A. M., Ploeger, H. W., Noordhuizen, J. P. T. M. and Vertommen, M. H. Rate and course of sporulation of oocysts of <i>Eimeria acervulina</i> under different environmental conditions	497
Henken, A. M., Ploeger, H. W., Graat, E. A. M. and Carpenter, T. E. Description of a simulation model for the population dynamics of <i>Eimeria acervulina</i> infection in broilers	503
Henken, A. M., Graat, E. A. M., Ploeger, H. W. and Carpenter, T. E. Description of a model to simulate effects of <i>Eimeria acervulina</i> infection on broiler production	513
Lieshout, van L., de Jonge, N., El-Masry, N., Mansour, M. M., Bassily, S., Krijger, F. W. and Deelder, A. M. Monitoring the efficacy of different doses of praziquantel by quantification of circulating antigens in serum and urine of schistomiasis patients	519
Khalife, J., Liu, J. L., Pierce, R., Porchet, E., Godin, C. and Capron, A. Characterization and localization of <i>Schistosoma mansoni</i> calreticulin Sm58	527
Khalife, J., Pierce, R. J., Godin, C. and Capron, A. Molecular characterization of two <i>Schistosoma mansoni</i> proteins sharing common motifs with the vif protein of HIV-1	533
Stagg, D. A., Bishop, R. P., Morzaria, S. P., Shaw, M. K., Wesonga, D., Orinda, G. O., Grootenhuis, J. G., Molyneux, D. H. and Young, A. S. Characterization of <i>Theileria parva</i> which infects waterbuck (<i>Kobus defassa</i>)	543
Stitt, A. W. and Fairweather, I. The effect of sulphoxide metabolite of triclabendazole ('Fasinex') on the tegument of mature and immature stages of the liver fluke, <i>Fasciola hepatica</i>	555
Jaenike, J. Aggregations of nematode parasites within <i>Drosophila</i> : proximate causes	569
Griffiths, G. and Pritchard, D. I. Purification and biochemical characterization of acetylcholinesterase (AChE) from the excretory/secretory products of <i>Trichostrongylus colubriformis</i>	579
Brownlee, D. J. A., Brennan, G. P., Halton, D. W., Fairweather, I. and Shaw, C. Ultrastructural localization of pancreatic polypeptide- and FMRFamide immunoreactivities within the central nervous system of the nematode, <i>Ascaris suum</i> (Nematoda: Ascaroidea)	587
Hawthorne, S. J., Halton, D. W. and Walker, B. Identification and characterization of the cysteine and serine proteinases of the trematode, <i>Haplometra cylindracea</i> and determination of their haemoglobinase activity	595

CAMBRIDGE
UNIVERSITY PRESS



0031-1820(199406)108:5;1-Q