CAMBRIDGE

JOURNALS

Knowledge is no longer shelved

The Cambridge Journals Digital Archive contains more than 160 journals, more than 3 million pages and more than 8 million linked references. Knowledge is now more visible and more searchable than ever.



journals.cambridge.org/archives

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

animal

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

Editor-in-Chief Jean Noblet, INRA, Rennes-St Gilles, 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.

For free online content visit: http://journals.cambridge.org/anmsample

and Carace and Contractory and a second s



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

To subscribe contact Customer Services

Americas: Phone +1 (845) 353 7500 Fax +1 (845) 353 4141 Email subscriptions_newyork@cambridge.org

Rest of world: Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

Price Information is available at: http://journals.cambridge.org/anm

CAMBRIDGE

JOURNALS

Parasitology

Editor-in-Chief R. S. Phillips, University of Glasgow, UK

Parasitology is an important specialist journal covering the latest advances in the subject. It publishes original research and review papers on all aspects of parasitology and host-parasite relationships, including the latest discoveries in parasite biochemistry, molecular biology and genetics, ecology and epidemiology in the context of the biological, medical and veterinary sciences. Included in the subscription price are two special issues which contain reviews of current hot topics in parasitology, one of which is the proceedings of the annual Symposium of the British Society for Parasitology, while the second, covering areas of significant topical interest, is commissioned by the editors and the editorial board.

Price information

is available at: http://journals.cambridge.org/par

Free email alerts

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

For free online content visit: http://journals.cambridge.org/par



Parasitology is available online at: http://journals.cambridge.org/par

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



Notes for Authors

Animal Health Research Reviews provides an international vehicle for the publication of reviews and commentaries on all aspects of animal health. The Journal covers both infectious and non-infectious diseases in domestic and wild animals. Articles may be in-depth reviews of a specific aspect of a disease or pathogen, or may cover all aspects of a disease, but must include new findings or advance new concepts and hypotheses. The Journal publishes both solicited and unsolicited articles. Reviews will normally be 5000–6000 words in length. The Journal is also produced electronically and is available on the Internet. As a contributor you should note and follow the guidelines set out below.

Refereeing. All contributions are read by two are more referees to ensure both accuracy and relevance, and revision may thus be required before final acceptance. Authors are asked to submit the names and contact details (including E-mail address if available) of up to four potential referees for their paper. On acceptance, contributions are subject to editorial amendment to suit house style.

Copyright. Papers are accepted on the understanding that the work has been submitted exclusively to the journal and has not been previously published elsewhere unless otherwise stated. Authors will be supplied with a copyright form that must be completed and returned to the Publisher. It is the author's responsibility to ensure that permission has been obtained from the copyright owner to reuse any figures or illustrations from previously published work.

Preparation of manuscripts. You should write in clear and concise English. Spelling should follow Webster's American Dictionary. Authors whose native tongue is not English are assured that in-house editorial attention to their contribution will improve clarity to readers.

Manuscripts should be submitted in Word double line spacing with ample margins (at least 2.5 cm) on each side. Do not underline anything. Number every page. Italic should be used for Latin names of organisms and bold for headings. Standard abbreviations (e.g. Fig. and Figs) and SI units must be used. Upon acceptance, authors are requested to submit an electronic file of the final version of their paper.

Arrangement of papers

- 1. Title page including the article title, author(s), affiliation(s), keywords and one author identified for correspondence (please include the full postal address, telephone and fax numbers, and an E-mail address where available).
- 2. An indicative abstract that should not exceed 200 words. A short title of up to 45 characters should be provided as a running head.
- 3. Keywords (between three and eight).
- 4. The text divided under appropriate headings.
- 5. Acknowledgements (if any).
- 6. References
- 7. Tables (at the end of the manuscript).
- 8. Legends to figures (group at the end of the manuscript).
- 9. Figures to be supplied as separate files.

Tables. Tables should be reduced to the simplest form, and should not be used where text or figures give the same information. They should be submitted at the end of the article. Each table must be accompanied by a clear and concise caption and must be cited in the text.

Figures. All figures must be cited in the text with appropriate captions supplied at the end of the manuscript after the References.

To ensure that your figures are reproduced to the highest possible standards, Cambridge Journals recommends the following formats and resolutions for supplying electronic figures. Please ensure that your figures are saved at final publication size and are in our recommended file formats. Each file must be clearly labelled, Fig 1 etc. Following these guidelines will result in high quality images being reproduced in both the print and the online versions of the journal.

Line artwork. Format: tif or eps Colour mode: black and white (also known as 1-bit) Resolution: 1200 dpi *Combination artwork (line/tone).* Format: tif or eps Colour mode: grayscale (also known as 8-bit) Resolution: 800 dpi *Black and white halftone artwork.* Format: tif Colour mode: grayscale (also known as 8-bit) Resolution: 300 dpi *Colour halftone artwork.* Format: tif Colour mode: CMYK

References. References should follow the Harvard system. Give the surnames and initials of all authors. Give journal titles in full.

Journal article. Shibata I, Mori M and Uruno K (1997) Experimental infection of maternally immune pigs with porcine reproductive and respiratory syndrome (PRRS) virus. *Journal of Veterinary and Medical Science* **60**: 1–13.

Book chapter. Sanderson CJ (1999) Cytokines active on eosinophils. In: Makino S and Fukuda T (eds) *Eosinophils: Biological and Clinical Aspects.* Boca Raton: CRC Press, pp. 274–283.

Book. Dalton JP (1999) Fasciolosis. Wallingford: CABI Publishing.

Please ensure that references are complete and correct, i.e. that they include, where relevant, author name(*s*), article or book title, volume number, edition number, publisher, and page range.

Proofs. Correspondence and proofs for correction will be sent to the first named author unless otherwise indicated. The author will receive pdf proofs for checking, but only mostly errors of a typographical nature will be accepted. It is important that proofs be returned promptly. Authors may be charged for any alterations in excessive corrections.

Offprints. The main author will receive a complimentary PDF of the paper. Offprints may be ordered prior to publication in print.

Submissions of manuscripts and correspondence

Three complete copies of the manuscript and artwork should be submitted to:

Professor Carlton L. Gyles Ontario Veterinary College University of Guelph Guelph Ontario Canada N1G 2W1

Animal Health Research Reviews - published by Cambridge University Press in collaboration with the Conference of Research Workers in Animal Diseases.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

Animal Health Research Reviews Volume 13 June 1 2012

Alphavirus replicon vaccines	
Ryan L. Vander Veen, D. L. Hank Harris and Kurt I. Kamrud	1
Metal acquisition and virulence in Brucella	
R. Martin Roop II	10
Mucosal vaccines to prevent porcine reproductive and respiratory syndrome: a new perspective	
Gourapura J. Renukaradhya, Varun Dwivedi, Cordelia Manickam, Basavaraj Binjawadagi and David Benfield	21
Introduction to the series of papers on animal microbiomes	
Janet I. MacInnes and Richard E. Isaacson	38
High throughput sequencing methods for microbiome profiling: application to food animal systems	
Sarah K. Highlander	40
The intestinal microbiota in the rat model: major breakthroughs from new technologies	
Julie Tomas, Philippe Langella and Claire Cherbuy	54
Feline gastrointestinal microbiota	
Yasushi Minamoto, Seema Hooda, Kelly S. Swanson and Jan S. Suchodolski	64
Current state of knowledge: the canine gastrointestinal microbiome	
Seema Hooda, Yasushi Minamoto, Jan S. Suchodolski and Kelly S. Swanson	78
The microbiome of the chicken gastrointestinal tract	
Carl J. Yeoman, Nicholas Chia, Patricio Jeraldo, Maksim Sipos, Nigel D. Goldenfeld	
and Bryan A. White	89
The intestinal microbiome of the pig	
Richard Isaacson and Hyeun Bum Kim	100
The microbiome of the soft palate of swine	
Shaun Kernaghan, Adina R. Bujold and Janet I. MacInnes	110
The equine intestinal microbiome	
Marcio C. Costa and J. Scott Weese	121
Commensal microbiome effects on mucosal immune system development in the ruminant gastrointestinal tract	
<i>Ryan Taschuk and Philip J Griebel</i>	129

Cambridge Journals Online For further information about this journal please go to the journal website at: journals.cambridge.org/jid_ahr



MIX Paper from responsible sources FSC[®] C013436

