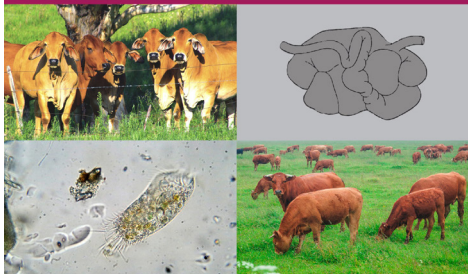


BURLEIGH DODDS SERIES IN AGRICULTURAL SCIENCE

Improving rumen function

Edited by Dr C. S. McSweeney, CSIRO, Australia
Professor R. I. Mackie, University of Illinois, USA



bd burleigh dodds
SCIENCE PUBLISHING

AVAILABLE NOW

About the book

Major advances in analytical techniques and genomics have transformed our understanding of rumen microbiology. This collection reviews what we know about rumen microbiota and the role of nutritional strategies in optimising their function for more sustainable livestock production.

About the editors

Dr Chris McSweeney is Chief Research Scientist at CSIRO, Australia, and is internationally-renowned for his research in ruminant gut microbiology and its implications for nutrition and livestock emissions.

Dr Roderick Mackie is Professor of Microbiology at the University of Illinois at Urbana-Champaign, USA. He is a leading expert on microbial ecology in the ruminant gut and its impact on nutrition and health.

Improving rumen function

Available in print and digital formats:

ISBN - print	978-1-78676-332-7
Pages	862
Pub. Date	June 2020
Price	£190/\$245/€230/C\$325
Series No	AS83

Order via our online bookshop at <https://bdspublishing.com>, your usual book supplier, or pass to your librarian.

Enquiries to info@bdspublishing.com

For a complete list of titles visit www.bdspublishing.com

T: +44 (0) 1223 839365

E: info@bdspublishing.com

<https://bdspublishing.com>

 @bdspublishing

 Burleigh Dodds Science Publishing

bd burleigh dodds
SCIENCE PUBLISHING

Improving rumen function

Edited by: Dr C. S. McSweeney, CSIRO, Australia; and Professor R. I. Mackie, University of Illinois, USA

1. Colonization and establishment of the rumen microbiota – opportunities to influence productivity and methane emissions: *Diego P. Morgavi and Milka Popova, INRAE, France; David Yáñez-Ruiz, CSIC, Spain; and Evelyne Forano, INRAE, France*

Part 1 Tools to understand the ruminal microbiome

2. A question of culture: bringing the gut microbiome to life in the -omics era: *Páiraic Ó Cuív, Microba Life Sciences and Mater Research Institute – The University of Queensland, Australia*
3. Rumen metabolomics – a powerful tool for discovery and understanding of rumen functionality and health: *Tom F. O’Callaghan, Teagasc Moorepark Food Research, Ireland; and Eva Lewis, Devenish, UK*
4. A conceptual approach to the mathematical modelling of microbial functionality in the rumen: *André Bannink, Soumya Kar, Dirkjan Schokker and Jan Dijkstra, Wageningen University and Research, The Netherlands*

Part 2 The rumen microbiota

5. Genome sequencing and the rumen microbiome: *Jessica C. A. Friedersdorff and Benjamin J. Thomas, Institute of Biological, Environmental and Rural Science (IBERS), Aberystwyth University and Institute of Global Food Security (IGFS), Queen’s University Belfast, UK; et al.*
6. The Rumen Archaea: *Graeme T. Attwood and Sinead C. Leahy, AgResearch Ltd and New Zealand Greenhouse Gas Research Centre, New Zealand; and William J. Kelly, Donvis Ltd, New Zealand*
7. Ruminal-ciliated protozoa: *Sharon A. Huws, Queen’s University Belfast, UK; Cate L. Williams, Aberystwyth University, UK; and Neil R. McEwan, Robert Gordon University, UK*
8. The anaerobic rumen fungi: *Matthias Hess, University of California-Davis, USA; Katerina Fliegerová, Czech Academy of Sciences, Institute of Animal Physiology and Genetics, Czech Republic; et al.*
9. Ruminal viruses and extrachromosomal genetic elements: *Rosalind Ann Gilbert and Diane Ouwerkerk, Department of Agriculture and Fisheries, Queensland Government and Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Australia*
10. The rumen wall microbiota community: *Mi Zhou, University of Alberta, Canada; Junhua Liu, Nanjing Agricultural University, China; and Le Luo Guan, University of Alberta, Canada*

Part 3 Nutrient processing in the rumen and host interactions

11. Ruminal fibre digestion: *Adrian E. Naas and Phillip B. Pope, Norwegian University of Life Sciences, Norway*

12. Ruminal protein breakdown and ammonia assimilation: *Jeffrey L. Firkins, The Ohio State University, USA; and Roderick I. Mackie, University of Illinois, USA*
13. Factors influencing the efficiency of rumen energy metabolism: *Emilio M. Ungerfeld, Instituto de Investigaciones Agropecuarias (INIA), Chile; and Timothy J. Hackmann, University of California-Davis, USA*
14. Understanding rumen lipid metabolism to optimize dairy products for enhanced human health and to monitor animal health: *Veerle Fievez, Nympha De Neve and Lore Dewanckele, Ghent University, Belgium*
15. Nutritional factors affecting greenhouse gas production from ruminants: implications for enteric and manure emissions: *Stephanie A. Terry, Agriculture and Agri-Food Canada, Canada and University of Sydney, Australia; et al.*
16. Host-rumen microbiome interactions and influences on feed conversion efficiency (FCE), methane production and other productivity traits: *Elie Jami, Agricultural Research Organization – Volcani Center, Israel; and Itzhak Mizrahi, Ben-Gurion University of the Negev, Israel*
17. The rumen as a modulator of immune function in cattle: *S. Aditya, University of Veterinary Medicine Vienna, Austria and Brawijaya University, Indonesia; and E. Humer and Q. Zebeli, University of Veterinary Medicine Vienna, Austria*

Part 4 Nutritional strategies to optimise ruminal function

18. Role of the rumen microbiome in pasture-fed ruminant production systems: *Sinéad M. Waters, David A. Kenny, Teagasc Animal and Bioscience Research Department, Ireland; et al.*
19. Optimising ruminal function: the role of silage and concentrate in dairy cow nutrition to improve feed efficiency and reduce methane and nitrogen emissions: *Aila Vanhatalo and Anni Halmemies-Beauchet-Filleau, University of Helsinki, Finland*
20. The use of feedlot/cereal grains in improving feed efficiency and reducing by-products such as methane in ruminants: *Kristin Hales, US Meat Animal Research Center – USDA-ARS, USA; et al.*
21. Plant secondary compounds: beneficial roles in sustainable ruminant nutrition and productivity: *David R. Yáñez-Ruiz and Alejandro Belanche, Estación Experimental del Zaidín, CSIC, Spain*
22. The use of probiotics as supplements for ruminants: *Frédérique Chaucheyras-Durand and Lysiane Dunière, Lallemand Animal Nutrition and Université Clermont Auvergne, INRAE, UMR 454 MEDIS, France*