

Mammalian Host Defense Peptides

AMCM

Cationic antimicrobial peptides are multifunctional peptides of the innate immune system, which not only act directly against microorganisms, but also signal between early and late immune responses and modulate inflammatory responses. The significance of these host defense peptides in combating infection and in host-microbe homeostasis has become increasingly clear, through advances made by microbiologists, biochemists, biophysicists, immunologists, molecular biologists, and a range of medical and pharmaceutical researchers. This book, drawing together contributions from leading scientists, reviews significant recent advances in our knowledge of mammalian antimicrobial peptides. In addition to providing up-to-date overviews of their structure, expression, and biology, their multiple activities and interactions with microbial populations as well as their potential application as novel therapeutic agents are summarized. Chapters that describe developments by use of animal models and investigations of the roles of these host defense peptides in microbial infections are complemented by chapters that address their mechanisms of action and of microbial resistance.

Deirdre A. Devine is a Senior Lecturer in Microbiology in the Division of Oral Biology at the Dental Institute, University of Leeds, UK. Her research focuses on the role of antimicrobial peptides in control of the resident microflora and in preventing disease. She also works on oral anaerobes, environmental regulation of bacterial virulence factors, biofilms and new antimicrobial approaches. She is the coeditor of *Medical Implications of Biofilms* (2003).

Robert E. W. Hancock is professor of Microbiology and Immunology at the University of British Columbia (UBC) and is a Canada Research Chair holder. He is head of the UBC Centre for Microbial Diseases and Immunity Research. His research interests include antibiotic uptake and resistance, functional genomics, and the development of small cationic peptides as novel antimicrobials and immune modulators.

Cover photo: The human cathelicidin host defense peptide LL-37 was modeled based on the known structure of the mouse homolog CRAMP using the program Insight II, by Dr Annett Rozek, Department of Microbiology and Immunology, University of British Columbia. The darker grey shows the hydrophilic and charged amino acids, while the lighter shade represents hydrophobic residues.

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