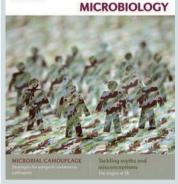
## IN THIS ISSUE



## REVIEWS



► COVER: 'Camouflage' by George Marshall, inspired by the Review on p493.





CHRISTIAAN VAN OOI



ANDREW JERMY

n the dim and distant past, hospitals were viewed as places to go to be treated for an illness. However, the rise in health care-associated infections over the past decade has been so great that hospitals are now viewed more as places to go to acquire an infection. *Clostridium difficile* is one of the most important causes of health care-associated infections, and on page 526, Maja Rupnik, Mark Wilcox and Dale Gerding review the epidemiology and pathogenesis of *C. difficile* infection. Since 2001, there has been a continuous increase in the incidence of *C. difficile* infection in the United States, Canada and Europe, much of which has been attributed to the emergence of the epidemic *C. difficile* strain BI/NAP1/027. Rupnik and colleagues discuss the changing epidemiology of *C. difficile* infection, the latest treatment and prevention regimens and what is known about *C. difficile* virulence.

One element of the host response that determines whether a *C. difficile* infection is symptomatic or not is the presence of an immunoglobulin G response to *C. difficile* toxin A. The immune response is an obstacle that is faced by all microorganisms that infect humans. On page 493, Kirk Deitsch, Sheila Lukehart and James Stringer review how bacterial, protozoan and fungal pathogens have evolved surprisingly similar mechanisms of antigenic variation to avoid eradication by the immune system.

Finally, in a Progress article on page 485, K. Heran Darwin discusses the recent identification of prokaryotic ubiquitin-like protein (Pup), a ubiquitin-like modifier. Despite the presence of proteasomes in some bacteria and all archaea, post-translational protein modifiers were thought to be absent. Darwin discusses the identification of Pup in *Mycobacterium tuberculosis* and the implications of this finding.

## EDITORIAL OFFICES

LONDON NatureReviews@nature.com The Macmillan Building, 4 Crinan Street, London N1 9XW LIK Tel: +44 (0)20 7843 3620; Fax: +44 (0)20 7843 3629 CHIEF EDITOR: Christiaan van Ooij SENIOR EDITOR: Sheilagh Molloy ASSOCIATE EDITOR: Andrew Jern SENIOR COPY EDITOR (NRMICRO): Gillian Young SENIOR COPY EDITORS: Craig Nicholson, Man Tsuey Tse ART EDITOR: George Marshall ART CONTROLLER: Susanne Harris SENIOR ART EDITORS: Vicky Summersby, Patrick Morgan MANAGING PRODUCTION EDITOR: ludith Shadwel SENIOR PRODUCTION EDITOR: Simon Fenwick PRODUCTION CONTROLLER: Natalie Smith

SENIOR EDITORIAL ASSISTANT: Laura Firman EDITORIAL ASSISTANT: Jacques Smit WEB PRODUCTION MANAGER: Deborah Anthony MARKETING MANAGERS: Tim Redding, Leah Rodriguez

## MANAGEMENT OFFICES

LONDON nature@nature.com The Macmillan Building, 4 Crinan Street, London N1 9XW, UK Tel: +44 (0)20 7833 4000; Fax: +44 (0)20 7843 4596/7 OFFICE MANAGER: Kiersty Darnell PUBLISHER: Stephanie Diment MANAGING DIRECTOR: Steven Inchcoombe EDITOR-IN-CHIEF, NATURE PUBLICATIONS: Philip Campbell ASSOCIATE DIRECTORS: Jenny Henderson, Tony Rudland EDITORIAL PRODUCTION DIRECTOR: James McQuat PRODUCTION DIRECTOR: Yvonne Strong DIRECTOR, WEB PUBLISHING: Timo Hannay HEAD OF WEB PRODUCTION: Alexander Thurrell NATUREJOBS PUBLISHER: Della Sar

NEW YORK nature@natureny.com Nature Publishing Group, 75 Varick Street, 9th floor, New York, NY 10013-1917, USA Tel: +1 212 726 9200; Fax: +1 212 696 9006 CHIEF TECHNOLOGY OFFICER: Howard Rate HEAD OF INTERNAL SYSTEMS DEVELOPMENT: Anthony Barrera HEAD OF SOFTWARE SERVICES: Luigi Squillante HEAD OF GLOBAL ADVERTISING, SALES AND SPONSORSHIP: Dean Sanderson HEAD OF NATURE RESEARCH & REVIEWS MARKETING: Sara Girard BUSINESS DEVELOPMENT EXECUTIVE: David Bagshav

TOKYO nature@natureasia.com Chiyoda Building 5F, 2-37-1 Ichigayatamachi, Shinjuku-ku, Tokyo 162-0843, Japan Tel: +81 3 3267 8751; Fax: +81 3 3267 8746 ASIA-PACIFIC PUBLISHER: Antoine E Bocquet MANAGER: Koichi Nakamura ASIA-PACIFIC SALES DIRECTOR: Kate Yoneyama SENIOR MARKETING MANAGER: Peter Yoshihara MARKETING/PRODUCTION MANAGER: Takesh Murakami INDIA SA/12 Ansari Road, Daryganj, New Delhi 110 002, India Tel/Fax: +91 11 2324 4186

SALES AND MARKETING MANAGER, INDIA: Harpal Singh Gill Copyright © 2009 Nature Publishing Group Research Highlight images courtesy of Getty Images unless otherwise credited. Printed in Wales by Cambrian Printers on acid-free paper