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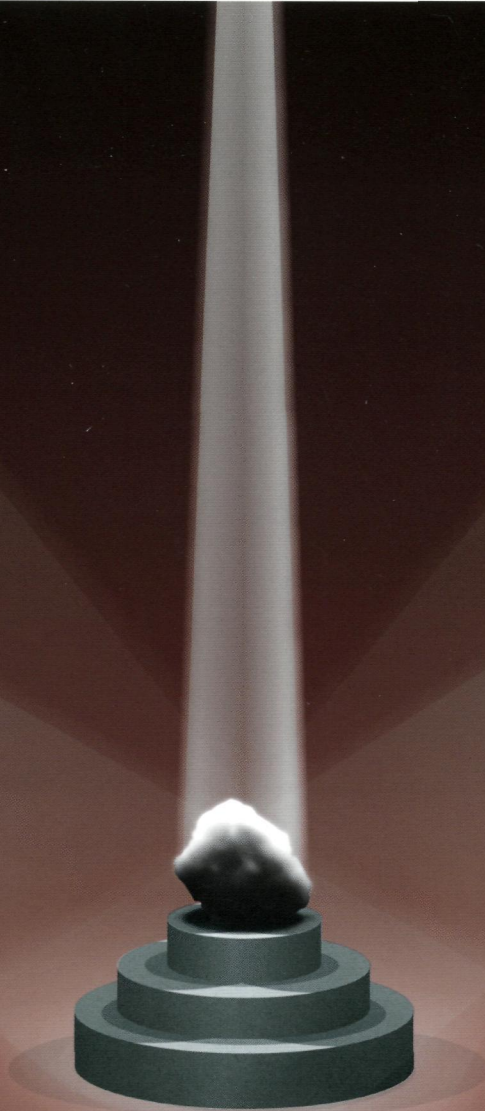
# nature

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# REVIEWS

september 2014 volume 12 no. 9  
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# MICROBIOLOGY



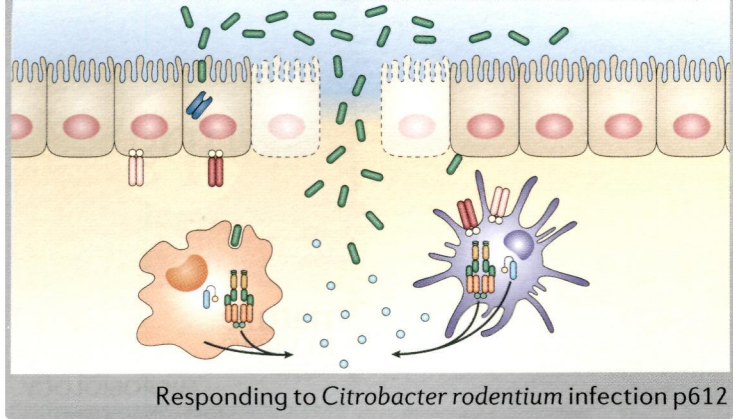
## SPOTLIGHT ON DARK MATTER

Illuminating pervasive transcription

## Intestinal inflammation and the microbiota

Insights from *Citrobacter* infection





Responding to *Citrobacter rodentium* infection p612

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## REVIEWS

### 599 Novel bacterial ADP-ribosylating toxins: structure and function

Nathan C. Simon, Klaus Aktories and Joseph T. Barbieri  
Bacterial ADP-ribosyltransferase toxins (bARTTs) transfer ADP-ribose to a range of eukaryotic proteins to promote bacterial pathogenesis. In this Review, the authors discuss the structural and functional properties of the most recently identified novel bARTTs, which are produced by various human, insect and plant pathogens and were identified using bioinformatic analyses.

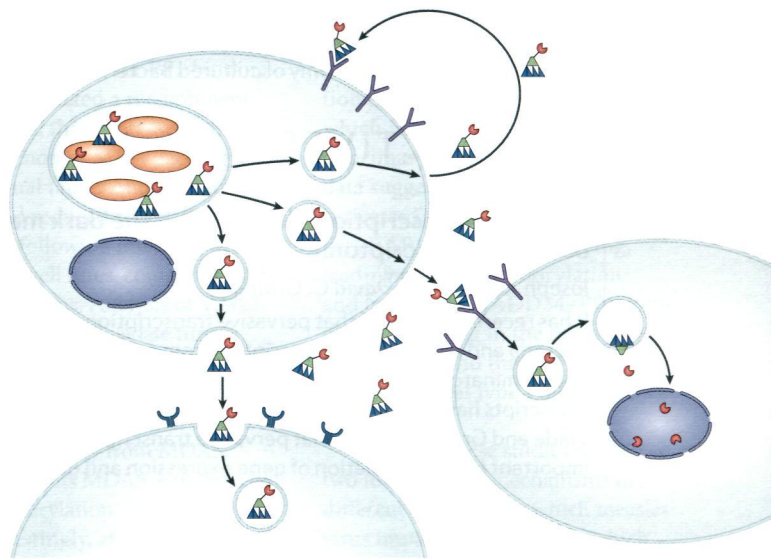
### 612 **FEATURED ARTICLE** *Citrobacter rodentium*: infection, inflammation and the microbiota

James W. Collins, Kristie M. Keeney, Valerie F. Crepin, Vijay A. K. Rathinam, Katherine A. Fitzgerald, B. Brett Finlay and Gad Frankel

The mouse pathogen *Citrobacter rodentium* has long been used as a model for investigating the pathogenesis of the important enteric human pathogens, enterohaemorrhagic *Escherichia coli* (EHEC) and enteropathogenic *E. coli* (EPEC). In this Review, Frankel and colleagues discuss the infection cycle of this pathogen, the mucosal immune response that is elicited and the role of the gut microbiota in preventing colonization.

### 624 RAB11-mediated trafficking in host-pathogen interactions

Annabel Guichard, Victor Nizet and Ethan Bier  
Pathogens block or subvert host cellular processes to promote successful infection. One host protein that is targeted by invading pathogens is the small GTPase RAB11, which functions in vesicular trafficking. Bier and colleagues discuss the various mechanisms that pathogens have evolved to disrupt or subvert RAB11-dependent pathways as part of their infection strategy.



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Alison Buchan, Gary R. LeClerc, Christopher A. Gulvik and José M. González

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Jan Münch, Ludger Ständker, Wolf-Georg Forssmann and Frank Kirchhoff

Microbial oceanography and the Hawaii Ocean Time-series programme

David M. Karl and Matthew J. Church

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The full text of articles includes author biographies, links to glossary terms and links to websites and databases with relevant information.

**Key points** provides a bullet-pointed summary of the main topics covered in each article.

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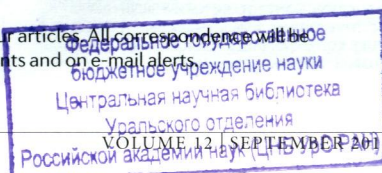
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## ANALYSIS

635 Uniting the classification of cultured and uncultured bacteria and archaea using 16S rRNA gene sequences

*Pablo Yarza, Pelin Yilmaz, Elmar Pruesse, Frank Oliver Glöckner, Wolfgang Ludwig, Karl-Heinz Schleifer, William B. Whitman, Jean Euzéby, Rudolf Amann and Ramon Rosselló-Móra*

The vast increase in the number of 16S ribosomal RNA gene sequences that are now available has led to an urgent need to implement taxonomic boundaries and classification principles that can apply to both cultured and uncultured microorganisms. In this Analysis article, the authors use 16S rRNA gene sequence identities to propose rational taxonomic boundaries for high taxa of bacteria and archaea and suggest a rationale for the circumscription of uncultured taxa that is compatible with the taxonomy of cultured bacteria and archaea.

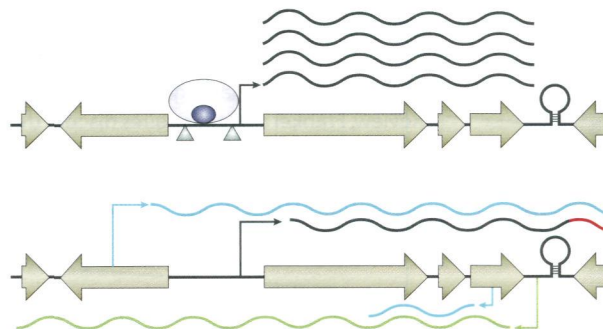
## PERSPECTIVES

OPINION

647 Pervasive transcription: illuminating the dark matter of bacterial transcriptomes

*Joseph T. Wade and David C. Grainger*

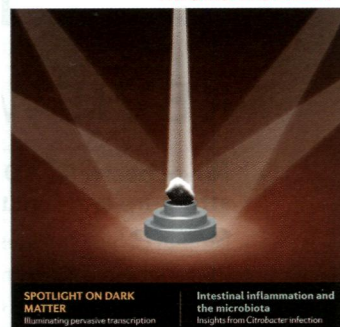
It has recently emerged that pervasive transcription is widespread in bacteria and is caused by transcription from non-canonical promoters and terminator readthrough. However, whether the resultant transcripts have any functional role is unclear. In this Opinion article, Wade and Grainger argue that pervasive transcripts are likely to be important for the regulation of gene expression and genome evolution.



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► COVER: 'Illuminating dark matter' by Philip Patenall, inspired by the Opinion article on p647.

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