

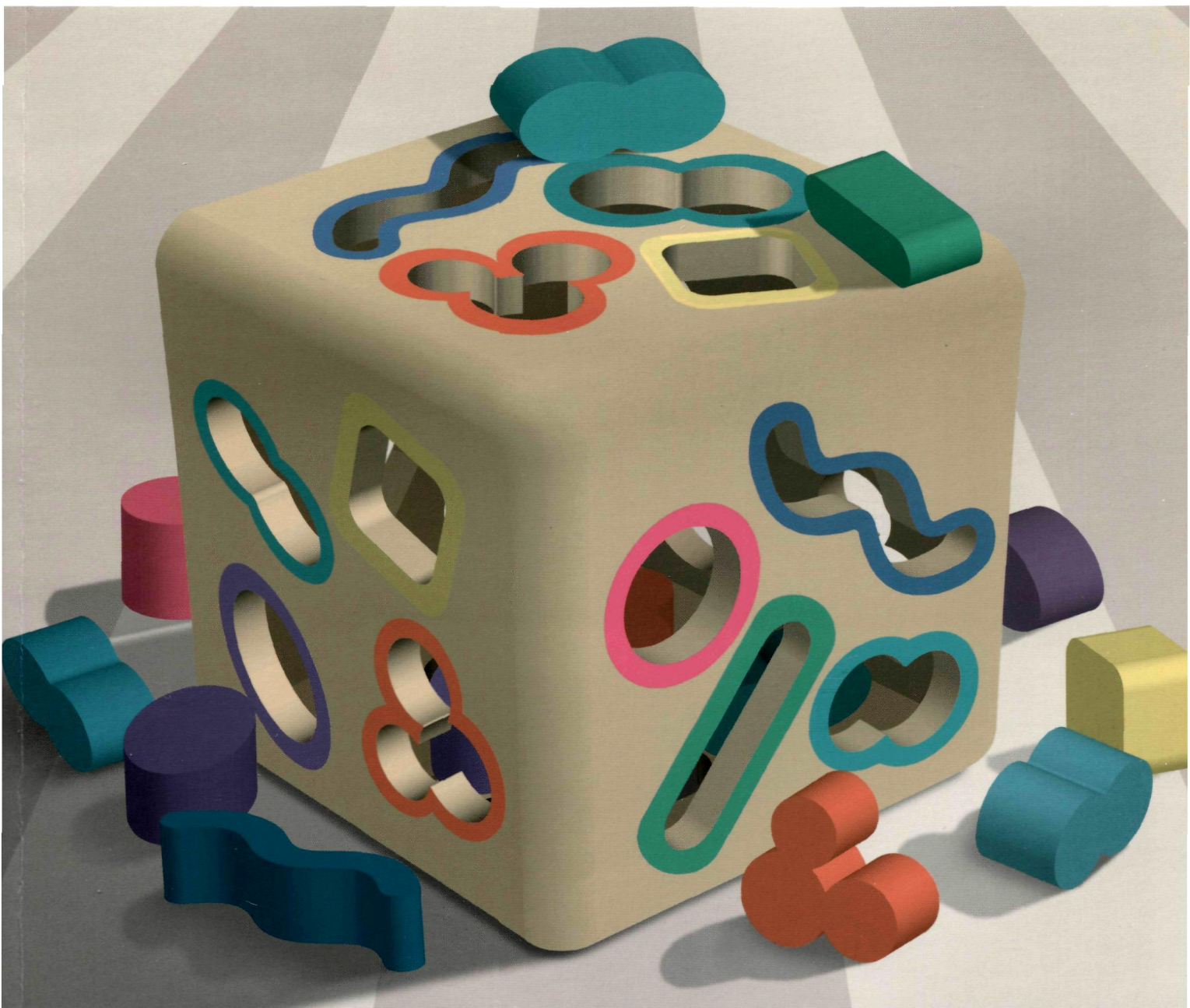
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# REVIEWS

september 2013 volume 11 no. 9  
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## MICROBIOLOGY

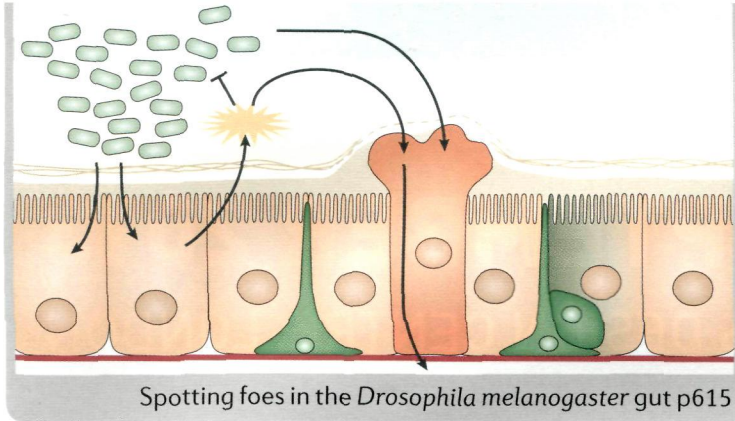


### SHAPES AND SIZES

Growth and division in  
cocci bacteria

### Knowing your friends

Intestinal homeostasis in  
*Drosophila melanogaster*



Spotting foes in the *Drosophila melanogaster* gut p615

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## REVIEWS

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### How to get (a)round: mechanisms controlling growth and division of coccoid bacteria

Mariana G. Pinho, Morten Kjos and Jan-Willem Veening

Recent studies have provided mechanistic insight into the cell cycle of coccoid bacteria. In this Review, Pinho, Kjos and Veening discuss our current understanding of the molecular mechanisms orchestrating peptidoglycan synthesis, cell division and chromosome segregation in *Staphylococcus aureus* and *Streptococcus pneumoniae*.

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### The cell cycle of archaea

Ann-Christin Lindås and Rolf Bernander

Bernander and Lindås provide an overview of recent studies that have enhanced our understanding of the archaeal cell cycle. They discuss the multiple-origin mode of DNA replication, the archaeal replisome, the identification of a genome segregation machinery, the first cytoskeletal structure and the discovery of a novel cell division system.

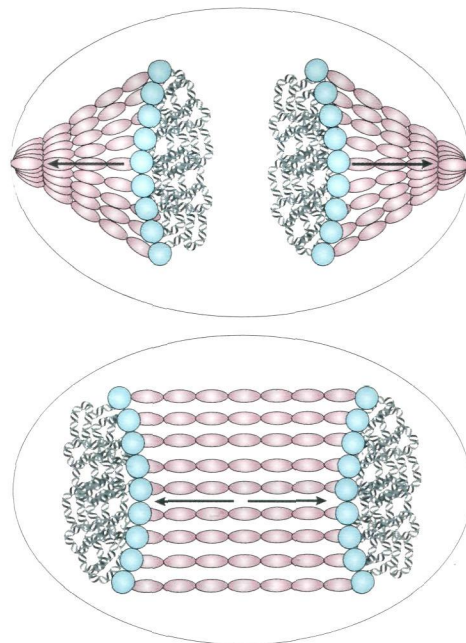
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FEATURED ARTICLE

### Gut homeostasis in a microbial world: insights from *Drosophila melanogaster*

Nicolas Buchon, Nichole A. Broderick and Bruno Lemaitre

Achieving intestinal homeostasis is a balancing act of attacking pathogens while tolerating the gut microbiota, and repairing damaged tissue following infection. Here, Lemaitre and colleagues discuss insights obtained from the study of host-microorganism interactions in the *Drosophila melanogaster* gut.



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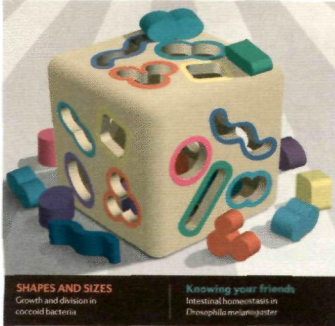
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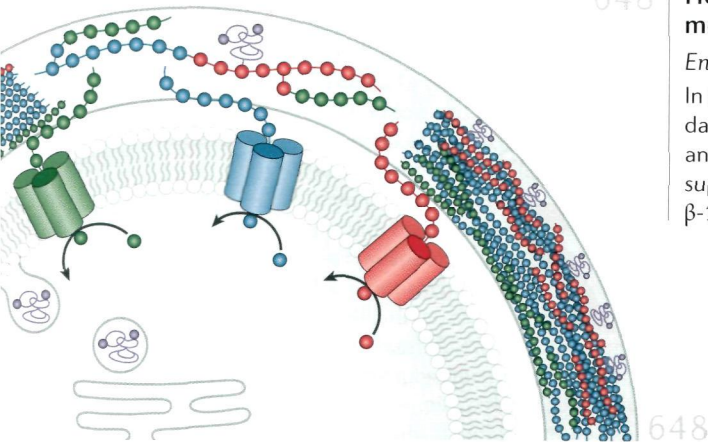
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**SHAPES AND SIZES**  
Growth and division in  
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Knowing your friends  
Intestinal homeostasis in  
*Thryothello marianus* zoster

► **COVER:** 'Shapes and sizes' by Philip Patenall, inspired by the Review on p601.



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## NEWS &amp; ANALYSIS

600 **Genome watch** Back to the Future!

## PERSPECTIVES

OPINION

639 **Gut microbiota and obesity: from correlation to causality***Liping Zhao*

Although the gut microbiota has been linked to a wide range of diseases in humans, including type 2 diabetes and obesity, moving from correlation to causation is notoriously difficult. In this Opinion article, Liping Zhao discusses some of the correlations that have been made between the microbiota and obesity to date, and how to move towards causation using the conceptual framework of Koch's postulates.

648 **How carbohydrates sculpt cells: chemical control of morphogenesis in the yeast cell wall***Enrico Cabib and Javier Arroyo*

In budding yeast, growth at the neck region connecting the mother and daughter cell is prevented by a septin ring inside the cell membrane and a chitin ring in the cell wall. Cabib and Arroyo describe recent work supporting the hypothesis that the attachment of the chitin ring to  $\beta$ -1,3-glucan is crucial for the control of morphogenesis at the neck.

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