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► **COVER:** 'Voyage of Death' by George Marshall, inspired by the Review on p288.



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One of the icons of modern medicine, the Canadian physician William Osler, once described *Streptococcus pneumoniae* as 'the captain of the men of death', an honour that he had previously bestowed upon another scourge of man, tuberculosis. In a Review on page 288, Kadioglu, Weiser, Paton and Andrew discuss how this formidable pathogen deploys its impressive arsenal of virulence factors to colonize the respiratory tract and cause the sometimes fatal diseases pneumococcal septicaemia and pneumonia.

The cell wall of the Gram-positive pneumococcus serves an important role in colonization, and, in common with other Gram-positive bacteria, it has a thickened peptidoglycan structure. In a Review on page 276, Weidenmaier and Peschel discuss features of the glycopolymers that decorate the cell walls of all Gram-positive bacteria. The authors postulate that they are members of a family of molecules that share key features and propose a classification system for these cell-wall glycopolymers that is based on their electrostatic properties. Their role in infection and clear potential as vaccine candidates mean that these surface sugars merit attention.

Whereas Gram-positive bacteria have copious amounts of peptidoglycan in their cell walls, Planctomycetes are the only free-living bacteria known to completely lack peptidoglycan. In a fascinating Timeline article on page 320, Gijis Kuenen describes how his quest to track down the bacteria responsible for anaerobic ammonia oxidation, or the anammox reaction, led him, and his collaborators, to these unconventional bacteria. This tale showcases how traditional microbiological enrichment culturing techniques combined with sequencing of an uncultivated organism resulted in new insights into the nitrogen cycle.

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Printed in Wales by Cambrian Printers
on acid-free paper