



nature publishing group



► COVER: 'Social networking' by Philip Patenall, inspired by the Review on p440.

**M**icrobiology spans all three domains of cellular life (the Bacteria, the Archaea and the Eukarya), as well as viruses. These groups share many basic features, but this month, we cover specific aspects of all four of these groups.

Within the Bacteria, the planctomycetes form a separate phylum. These organisms have specialized structures, such as anammoxosomes, and internal membranes that bear resemblance to eukaryotic structures. As described by Fuerst and Sagulenko on page 403, this places them at an intriguing evolutionary position between bacteria and eukaryotes.

On page 414, Albers and Meyer describe the surface of archaeal cells. In contrast to bacteria, many of these cells possess a paracrystalline protein layer, and glycosylation is common in many extracellular proteins. Other surface structures, such as pili, mediate the interaction of the archaea with the environment.

Fungi, representatives of the Eukarya, may make up one-quarter of all the Earth's biomass. On page 440, Leeder, Palma-Guerrero and Glass describe the chemical language that these organisms use to communicate with each other. These interactions regulate processes such as germination, growth, mating and the formation of a social network.

Finally, in contrast to most cellular microorganisms, viruses rely on a host cell to replicate. Many viruses utilize the actin cytoskeleton of the host cell for all steps of their life cycle, as described by Taylor, Koyuncu and Enquist on page 427. These interactions are also important for the transformation of host cells by viruses.



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