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► **COVER:** 'A hitchhiker's guide' by Philip Patenall, inspired by the Review on p645.



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**C**ontrary to the traditional view that bacteria live as dispersed individual cells in planktonic environments, it is becoming increasingly clear that in their natural environments many bacteria form complex communities that accumulate on surfaces. This sort of communal living can provide advantages, such as the ability to share resources and to resist environmental stresses. However, living in such 'sheltered accommodation' does not come cheaply, as the bacteria have to invest considerable resources in building and maintaining the community structure. On [page 623](#), Hans-Curt Flemming and Jost Wingender describe the functions, properties and constituents of the extracellular polymeric matrix that connects bacteria living in surface-associated biofilms.

Community life can also have its disadvantages; for example, nutrients can become scarce or the neighbourhood can become overpopulated. In such circumstances, bacteria can become motile, leaving the biofilm community in search of a more hospitable environment. On [page 634](#), Daniel Kearns describes how surface-associated bacteria migrate across a substrate in a process known as bacterial swarming.

Staying with the theme of microorganisms in motion, many pathogens circumvent the blood–brain barrier and invade the central nervous system by entering at the nerve terminal and travelling the length of the neuron to reach the cell body. However, a viral particle could take hundreds of years to travel the entire length of a neuron by diffusion alone. Therefore, as described by Sara Salinas, Giampietro Schiavo and Eric Kremer on [page 645](#), neurotropic viruses and bacterial toxins co-opt cellular trafficking pathways, becoming hitchhikers for their long-range axonal transport to neuronal cell bodies.

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