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► **COVER:** 'Making models' by Philip Patenall, inspired by the Review on p39.



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**P**ersistent infection with slow-growing or dormant bacteria can be difficult to treat, as most of the antimicrobials that are currently in use target biosynthetic processes that occur in growing cells. Therefore, the development of antimicrobial therapies that can target dormant bacteria is seen as a priority. On page 62, Julian Hurdle and colleagues describe the use of drugs that physically disrupt the bacterial membrane bilayer or target the proteins that are essential for membrane function, and discuss the emergence of these drugs as promising approaches for treating persistent infections.

The formation of biofilms can also play an important part in the ability of a bacterial infection to persist in the face of antimicrobial therapy. For example, as discussed by John Gunn and colleagues on page 9, *Salmonella enterica* subsp. *enterica* serovar Typhi can colonize the gall bladder and form biofilms on the surface of gallstones. Such chronic infections can persist for a long time after symptoms of acute infection have subsided, with the gall bladder serving as a reservoir for the further spread of the disease.

During both acute and chronic infections, there are often dramatic changes in the composition of the infected individual's normal microbiota, particularly following treatment with non-specific antimicrobials. Although restoration of a healthy microbiota may take some time following such an insult, recent studies have suggested that constituents of the normal microbiota may actually help the host to recover following infection. On page 27, Gregor Reid and colleagues explore the mechanisms underlying microbiota restoration following insult at four sites on the human body, highlighting microbiota recovery by natural processes and discussing the potential for supplementing these recovery processes with probiotic bacteria.

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