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**T**he ability of viruses to move between cells without diffusing through the extracellular environment enables them to evade host immune responses. In addition, direct cell-to-cell transmission of a virus facilitates rapid viral dissemination and could also influence disease. Ever resourceful, viruses have evolved to use numerous pathways for direct cell-to-cell transport between a range of cell types. On page 815, Quentin Sattentau reviews our current understanding of the various routes for direct cell–cell transmission and the mechanistic basis of these distinct processes.

In keeping with the theme of microbial movement, on page 838, Michael Ginger and colleagues focus their attention on cell motility in protists. These unicellular eukaryotes use their cilia and flagella to mediate fast cell motility. Here the authors discuss the role of energy metabolism in flagellar assembly and the relationship of flagellum function to parasite virulence.

Finally, on page 805, William Martin and colleagues dive into the world of geochemically active deep-sea hydrothermal vents. Such hydrothermal systems maintain chemical reactions that are not only important for supporting microbial niches but are surprisingly reminiscent of metabolic reactions in modern autotrophic prokaryotes. In this article, the authors review this unique border between geology and microbiology and ask whether we can learn anything new about the origin of life itself.

Also supplied with this issue is the fourth in our series of supplements on evaluating diagnostics, produced in conjunction with our partners at the TDR. The topic of this supplement is the evaluation of immunodiagnostics for CD4 counting as a marker for immunodeficiency progression during HIV-1 infection. The supplement can be accessed free online at <http://www.nature.com/nrmicro/supplements>.



SUSAN JONES



SHEILAGH MOLLOY



ANDREW JERMY



CHRISTIAAN VAN OOIJ



ASHER MULLARD

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on acid-free paper