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► COVER: 'Commuter commotion' by Tom Wilson, inspired by the Review on p253.



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This year marks 30 years since Carl Woese and George Fox published the ribosomal RNA sequence analysis that revealed that the living world, rather than being bipartite and composed of just prokaryotes and eukaryotes, is in fact tripartite, that is, it is composed of the three domains now known as the Archaea, Bacteria and Eukarya.

Over the past three decades our knowledge of the biological diversity of the Archaea has greatly increased, including insights into archaeal genomes and genome structures, and their physiology and metabolism. Although the Archaea and Bacteria can be distinguished in terms of their information processing apparatus — the DNA replication, transcription and translation machineries — little is known about the ecological distinctions between these two domains, in other words, why the diversity and abundance of the Archaea are so different from those of the Bacteria. In a fascinating Opinion article on page 316 of this issue, David Valentine addresses this question, and proposes that chronic energy stress is the primary selective force driving the evolution and diversification of this domain.

Many of you who work in large cities probably choose to live in the suburbs or the countryside and commute into work every day. In his Review on page 253, Stephen Goff compares mammalian cells to large metropolitan cities, with viruses undertaking the daily commute. He discusses how retroviruses make the long journey from outside the cell to the nucleus and back again. It is now known that retroviruses exploit an array of different host proteins during their lifecycle, with every step requiring a distinct set of host factors. Future progress, or "learning how to walk the streets and use the subways, taxis and airports" will be invaluable for virologists and cell biologists alike.

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