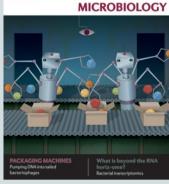
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► COVER: 'Packaging machines' by Philip Patenall, inspired by the Review on p647.





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he field of bacterial transcriptomics has been revolutionized in the past few years by the technological advances that have been made in sequencing capacity and by the tools that have become available for analysis. As described by Serrano and colleagues on page 658, these 'omic' approaches have revealed that the bacterial transcriptome is far more complex and dynamic than had been previously expected, with alternative transcripts within operons, small regulatory RNAs, epigenetic modifications, and spatial organization within the chromosome and the cell all affecting transcription.

Another area that has seen huge technological progress in recent years is the imaging of microorganisms. Among the powerful techniques that can now be employed, imaging mass spectrometry (IMS) allows the two-dimensional visualization of trace metals, metabolites, surface lipids, peptides and proteins directly from biological samples. In an Innovation article on page 683, Watrous and Dorrestein introduce the range of IMS approaches that is now available to microbiologists and discuss how they can be used to spatially map atoms and molecules in samples that range in scale from single cells to whole communities.

Finally, technology also underpins the recent breakthroughs that have been made in understanding how tailed bacteriophages are able to package their genomic DNA into viral particles such that the DNA is 100 times more compact than in solution. On page 647, Casjens describes how new structural insights into the packaging-motor proteins, coupled with single-molecule DNA-packaging experimental systems, have begun to provide detailed mechanistic insights into these packaging systems for the first time since they were discovered more than four decades ago.

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