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The ability to differentiate bacteria on the basis of different, or similar, ribosomal RNAs (rRNAs) is central to environmental microbiology. For example, oligonucleotide probes against 16S rRNA can be designed so that single bacterial cells from microbial communities can be sorted into domains, phyla and species using fluorescence *in situ* hybridization (FISH). On page 339, Rudolf Amann and Bernhard M. Fuchs review the recent progress that has been made in FISH analysis. The authors find that although group-specific probes, first designed 10 years ago, are still useful tools, these old probes need refinement. Moreover, efforts should be made to identify new probes from curated rRNA databases.

Meanwhile, on page 349, Jerry Wells and Annick Mercenier focus their attention on the possibility of using lactic acid bacteria (LAB) as delivery vehicles for therapeutic and prophylactic molecules. In 2006, a pilot trial demonstrated that LAB can be used safely to deliver interleukin-10 to humans, and subsequent *in vivo* studies have provided more insight into the potential therapeutic uses of LAB. With clinical proof on the horizon, it seems that LAB represent promising mucosal delivery systems.

Finally, on page 394, Anne Rowley and colleagues take up the search for the causative agent of Kawasaki disease (KD). KD is the most common cause of acquired heart disease in children in the developed world. Although many agents have been proposed as the cause of KD, none have been confirmed, which has hindered our ability to diagnose and treat this disease. In this Opinion, the authors discuss the recent discovery of intracytoplasmic inclusion bodies (ICIs) and propose that these ICIs provide insight into the cause of KD.

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