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Editorial overview

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The tools of metagenomics, transcriptomics, proteomics and metabolomics, which are commonly summarized under the heading *omics*, have begun to redefine how we approach research questions in environmental biotechnology. This issue contains a majority of articles that either describe the tools of *omics* or invoke systems biology — a nonreductionist approach intent on observing and integrating the information generated from omics analyses to model emerging properties of the systems studied — to chart the path ahead toward a better understanding and management of a variety of environments. These applications vary from the human gut microbiome all the way to bioremediation of chemically contaminated sites using chip-based technology.

And while these new approaches will continue to provide invaluable insights, especially into the vast and still mostly untapped reservoir of genes and functions in hitherto uncultivable microbes, it is equally important to acknowledge the contributions dealing with physiological traits and biotechnological technologies that study and interpret the functions of microbial communities and isolated strains using more traditional genetic, molecular and engineering-based methods. Examples in this issue relate to enrichment and isolation of metabolically diverse micoorganisms — still the ultimate goal for physiological characterization and many biotechnological applications — low temperature anaerobic digestion, and solvent tolerance in Gram-negative bacteria.

In conclusion, we believe that in their entirety the articles summarize many important research areas and a range of state-of-the-art methodologies, which we hope will guide the reader in the rapidly emerging field of environmental biotechnology.

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