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Sommario/riassunto

The global mandate for safer, cleaner and renewable energy has accelerated research on microbes that convert carbon sources to end-products serving as biofuels of the so-called first, second or third generation - e.g., bioethanol or biodiesel derived from starchy, sugar-rich or oily crops; bioethanol derived from composite lignocellulosic biomass; and biodiesels extracted from oil-producing algae and cyanobacteria, respectively. Recent advances in 'omics' applications are beginning to cast light on the biological mechanisms underlying biofuel production. They also unravel mechanisms important for organic solvent or high-added-value chemical production, which, along with those for fuel chemicals, are significant to the broader field of Bioenergy. The Frontiers in Microbial Physiology Research Topic that led to the current e-book publication, operated from 2013 to 2014 and welcomed articles aiming to better understand the genetic basis behind Bioenergy production. It invited genetic studies of microbes already used or carrying the potential to be used for bioethanol, biobutanol, biodiesel, and fuel gas production, as also of microbes posing as promising new catalysts for alternative bioproducts. Any research focusing on the systems biology of such microbes, gene function and regulation, genetic and/or genomic tool development, metabolic engineering, and synthetic biology leading to strain optimization, was considered highly relevant to the topic. Likewise, bioinformatic analyses and modeling pertaining to gene network prediction and function were

also desirable and therefore invited in the thematic forum. Upon e-book development today, we, at the editorial, strongly believe that all articles presented herein - original research papers, reviews, perspectives and a technology report - significantly contribute to the emerging insights regarding microbial-derived energy production.
Katherine M. Pappas, 2016