

Biocatalysis in the Flavor & Fragrance Industry

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The flavor and fragrance industry exploits various approaches for accessing a large and diverse palette of ingredients that serve the creative work of flavorists and perfumers. Botanical, animal or microbial raw materials traditionally were important sources for ingredients, although they are no longer the primary source. Additionally, many companies utilize petro-based synthetic chemistry for ingredients within given cost and regulatory constraints. More recently, biotechnology has enabled opportunities for development of new ingredients and novel routes to known ingredients & intermediates. The use of biosynthetic tools both in vivo as well as in vitro enables a growing array of chemistries under benign conditions often in combination with synthetic chemistry. Powerful engineering tools allow tackling stability, productivity, or selectivity issues of biocatalytic systems by tuning biocatalysts for performance under process conditions. Consequently, biotechnology continues to fuel the development of innovative processes and products that transform the F&F industry.