

Synthesis of unnatural compounds by enzyme engineering

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About 60% of the present drugs were developed from natural products with unique chemical diversity and biological activities. Hence, discovery of new bioactive compounds from natural products is still important for the drug development. On the other hand, breakthrough made in synthetic biology has also begun to supply us with many useful compounds through manipulation of biosynthetic gene for secondary metabolites.

Theoretically, this approach can also be exploited to generate new unnatural compounds by intermixing genes from different biosynthetic pathway. Considering the potential, we are studying about bioactive compounds in natural sources, as well as the biosynthesis of natural products including engineering of the secondary metabolite enzymes to make new compounds in order to construct the methodological basis of the synthetic biology. In this symposium, engineering of secondary metabolite enzymes that are involved in the biosynthesis of plant polyketides to generate new compounds in our laboratory will be mainly introduced.