

S27-2 **Supranatural Novel Biocatalysts**

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Plant type III polyketide synthases exhibit unusually broad, promiscuous substrate specificities. The structurally simple homodimeric proteins accept a variety of non-physiological substrates, including aromatic and aliphatic CoA thioesters, to produce an array of chemically and structurally divergent unnatural polyketides. On the other hand, the β -polyketo intermediates are highly reactive and readily react with amines to yield Schiff bases, which make it possible to introduce additional C-C or C-N bond forming chemistry to generate more complex enzyme reaction products. Combination of the structure-based protein engineering and precursor-directed biosynthesis with rationally designed nitrogen-containing synthetic analogues is expected to generate unnatural novel polyketide-alkaloid scaffolds. In the lecture, some of our recent results will be presented.