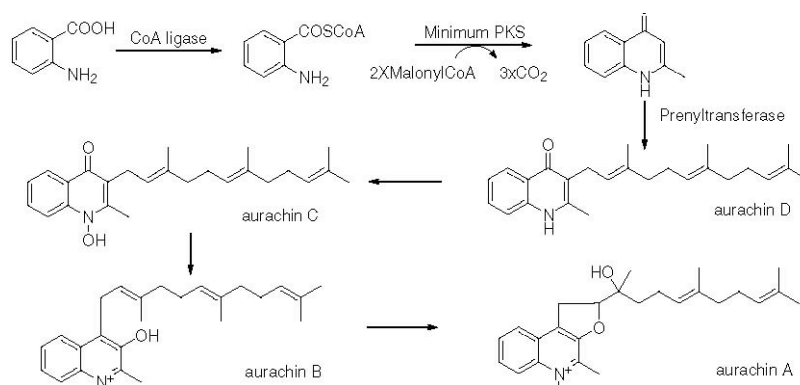


# Biosynthesis of Quinoline Alkaloids Aurachins from *Stigmatella auranciaca* Sg a15

*Yanyan Li, Dominik Pistorius, Axel Sandmann, Kira Weissman and Rolf Müller*

*Institute of Pharmaceutical Biotechnology, Saarland University 66123 Saarbrücken, Germany*

The gram-negative myxobacteria are prolific producers of secondary metabolites with structural diversity and biological activities. Recent advances in identifying and manipulating biosynthetic gene clusters in myxobacteria reveal novel enzymatic chemistry in many examples.<sup>1</sup> Aurachins are rare quinoline alkaloids produced by *Stigmatella auranciaca* Sg a15 which are respiratory electron transport inhibitors.<sup>2</sup> The gene cluster, identified by a mariner-based transposon mutagenesis strategy, contains five genes (*auaA-E*) involved in the biosynthesis of the prenylated quinoline core structure. Among them, *auaBCD* encode an acyl carrier protein, a ketosynthase  $\alpha$  (KS $\alpha$ ) and a ketosynthase  $\beta$  (KS $\beta$ ) subunit, respectively, which form a minimum type II polyketide synthase (PKS) system. To date the type II PKSs have been described exclusively in actinomycetes. Sequence and phylogenetic analysis of AuaC and AuaD revealed distinctive features to their homologues in actinomycetes. We report here detailed *in vitro* and *in vivo* studies identifying the aurachin PKS as a novel system that may represent an evolutionary transition species between the type II and type III PKS.<sup>3,4</sup>



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