

## **Heterologous expression of lichen polyketide synthase in filamentous fungi**

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Fungal polyketide synthase (PKS) genes code for large multifunctional polypeptides that assemble a core polyketide molecule from simple starter carboxylic acid precursors and several malonyl-CoA units in a similar fashion as in fatty acid synthesis. In the case of polyketide synthesis the keto moieties are reduced to a lower extent than in fatty acid synthesis and the remaining reactive oxygens are utilized in further modifications of the core molecule. Polyketides have a great commercial interest for drug discovery since many of these compounds possess desirable pharmaceutical properties and are a source of novel antibiotics, anti-tumor and anti-cancer agents (doxorubicin, epothilone A) and cholesterol-lowering drugs (lovastatin).

Although polyketide synthesis is widespread in filamentous fungi and lichen mycobionts relatively few PKS genes have been isolated from filamentous fungi and no PKS gene from lichens can be found in GenBank although one such gene has been isolated and sequenced (Ólafur S. Andrésón and Snorri Páll Davíðsson, unpublished).

The aim of our work was to express the cloned PKS gene from the lichen *Solorina crocea* in different filamentous fungi – *Aspergillus nidulans*, *A. niger*, *A. oryzae*, *Fusarium venenatum* – and identify new products arising. In order to achieve this goal we have used standard cloning methods and recombineering techniques to construct an approximately 16 kb plasmid with a selective marker mediating hygromycin resistance and with a strong fungal promoter (from *gdpA*) directing transcription of the lichen PKS gene. Recent PEG/CaCl<sub>2</sub>-mediated genetic transformations of *Aspergillus niger* with this plasmid construct allowed us to obtain transformants producing a coloured substance yet to be identified.