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Biosynthetic potential for polyketides in *Talaromyces atroroseus*

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**Abstract**

*Talaromyces atroroseus* is an efficient producer of red *Monascus* pigments. We genome sequenced *Talaromyces atroroseus* IBT11181 and found it to lack the *Monascus* pigment PKS with the rest of the *Monascus* pigment cluster intact. The PKS closest related to the *Monascus* pigment PKS is the mitorubrin PKS11, and deletion of PKS11 results in the loss of *Monascus* pigment production. *T. atroroseus* PKS11 is delivering a precursor for both the mitorubrins and the *Monascus* pigments. Based on this finding we propose hypothetical models for the evolution of azaphilone pigment PKS clusters in *Talaromyces* and *Monascus*.

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