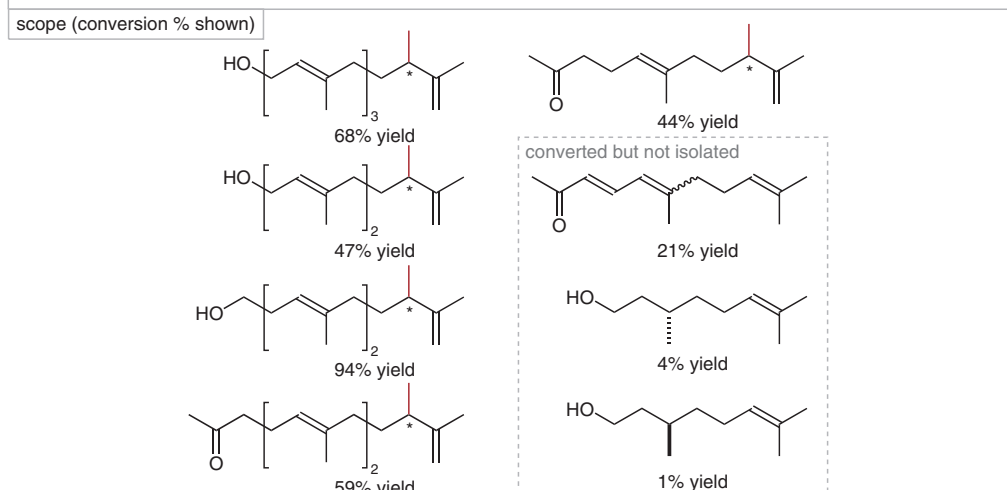
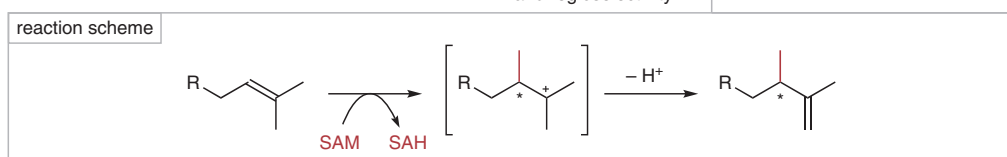
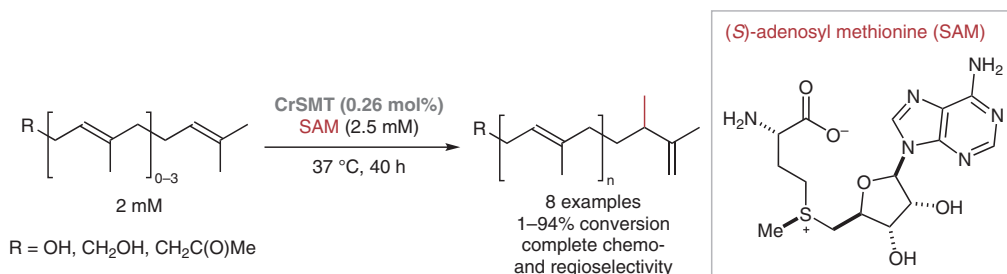


B. ABERLE, D. KOWALCZYK, S. MASSINI, A.-N. EGLER-KEMMERER, S. GERGEL, S. C. HAMMER, B. HAUER\* (UNIVERSITY OF STUTTGART, GERMANY)

Methylation of Unactivated Alkenes with Engineered Methyltransferases to Generate Non-natural Terpenoids  
*Angew. Chem. Int. Ed.* **2023**, e202301601 DOI: 10.1002/anie.202301601.

## Engineered Methyltransferase-Catalyzed Terminal Prenyl Group Tail Methylation of Linear Terpenoids



**Significance:** Hauer and co-workers report an engineered methyltransferase-catalyzed methylation of terminal prenyl groups on the tail end of linear terpenoids. The methyltransferase selected for this transformation came from *Chlamydomonas reinhardtii* and was subjected to three rounds of site-saturation mutagenesis in the optimization of the methylation of (*E,E*)-farnesol. In total, five terpenoids of various sizes were methylated with good to excellent conversions, all with complete chemo- and regioselectivity. Methylation was observed in three more terpenoids. However, low conversion did not allow for isolation or structural determination of the corresponding products.

**Comment:** The selectivity for the terminal prenyl group of the reported reaction is remarkable and was thus far not achievable through small-molecule catalysis. The authors report that the obtained methylated non-natural terpenoids are optically active. However, the absolute configuration of the products and the enantioselectivity of the reactions were not determined (although the authors suggest (*S*)-selectivity based on the reactivity of sterol). Chirality is of vital importance when considering the potential bioactivity-related applications of these molecules, and we hope that the authors will examine these factors in potential follow-up studies.

SYNFACTS Contributors: Benjamin List, Luc M. Debie  
Synfacts 2023, 19(07), 0709 Published online: 16.06.2023  
DOI: 10.1055/s-0042-1751944; Reg-No.: B06323SF

© 2023, Thieme. All rights reserved.  
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

Category

Organo- and  
Biocatalysis

Key words

methylation

alkenes

terpenoids

methyltransferases

Synfact  
of the  
Month

This document was downloaded for personal use only. Unauthorized distribution is strictly prohibited.