

## **Title: Biosynthesis of complex plant-derived natural products**

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Plants are a rich source of medicinal compounds. However, the discovery, synthesis, and supply chains for plant-based medicines remain ad hoc, biased, and tedious. While microbial biosynthesis presents compelling alternatives to traditional approaches based on extraction from natural plant hosts, many challenges exist in the reconstruction of plant specialized metabolic pathways in microbial hosts. We have developed approaches to address the challenges that arise in the reconstruction of complex plant biosynthetic pathways in microorganisms. We have utilized these strategies to develop yeast production platforms for important classes of plant alkaloids, including the medicinal opioids, noscapinoids, and tropane alkaloids. The intersection of synthetic biology, genomics, and informatics will lead to transformative advances in how we make and discover essential medicines.

### **Biography**

Christina Smolke is Professor (Research) in the Department of Bioengineering and, by courtesy, Chemical Engineering at Stanford University. Christina's academic research program develops foundational tools that drive transformative advances in our ability to engineer biology. Her group pioneered the development of yeast biosynthesis platforms for complex plant-based alkaloids. Christina is Co-Founder and CEO of Antheia, which leverages advances in synthetic biology, genomics, informatics, and fermentation to transform how we make and discover important medicines. Her impact in advancing the frontiers of biotechnology has been recognized with numerous awards, including Chan Zuckerberg Biohub Investigator, Nature's 10, AIMBE College of Fellows, NIH Director's Pioneer Award, WTN Award in Biotechnology, and TR35 Award.