

IMPROVED GENERATION OF TERPENE AND OTHER HIGH-VALUE BIOPRODUCTS FROM CYANOBACTERIA AND MICROALGAE

Tech ID: 25110 / UC Case 2015-194-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,391,950	08/19/2025	2015-194
India	Issued Patent	511727	02/16/2024	2015-194
United States Of America	Issued Patent	11,884,927	01/30/2024	2015-194
Australia	Issued Patent	2016281666	12/08/2022	2015-194
United States Of America	Issued Patent	10,876,124	12/29/2020	2015-194
European Patent Office	Published Application	3313981	05/02/2018	2015-194

BRIEF DESCRIPTION

Cyanobacteria and other microalgae can be used as photosynthetic platforms to heterologously generate terpene hydrocarbons and other high-value bioproducts. In addition to being a renewable and biological means of synthesis, cyanobacteria can be grown in high-volume liquid cultures; and terpenes are key ingredients in synthetic chemistry, medical products, cosmetics, and potentially fuels. However, current approaches to generating terpene using microalgae exhibit slow rates of production.

To address these low production levels, researchers at UC Berkeley have developed a method to increase transgenic terpene synthase expression resulting in high rates and yields of terpene hydrocarbon synthesis.

In proof-of-principle experiments, this Berkeley method yielded 20-fold higher amounts of terpene product, which could be easily harvested by siphoning off the top of the culture.

SUGGESTED USES

- Renewable biological synthesis of all types of terpene hydrocarbons and terpenoid derivatives
- Synthesis of bioproducts requiring high protein levels

ADVANTAGES

- Mechanism to synthesize high-value bioproducts
- Uses photosynthesis
- Can be used in different cyanobacterial species

RELATED MATERIALS

- » Regulation of β-phellandrene synthase gene expression, recombinant protein accumulation, and monoterpene hydrocarbons production in Synechocystis transformants.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » Agriculture & Animal Science
- » Chemicals
- » Processing and Packaging
- » Biotechnology
- » Genomics
- » Industrial/ Energy
- » Energy
- » Bioenergy
- » Hydrocarbon

RELATED CASES

2015-194-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

► [Improvements to Producing Biofuel from Cyanobacteria](#)



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