

Viewpoint: Claiming a ‘slippery slope’, Non-GMO Project opposes synthetic palm oil, which would protect biodiversity, limit climate change and reduce pollution

Palm oil is ubiquitous, in part because it has a [higher yield and lower cost of production](#) than any other vegetable oil. Oil palm is [primarily grown in the global south](#), with Malaysia and Indonesia being the largest producers. In developing countries, palm oil is primarily relied upon for use as [cooking oil](#).

In more affluent countries, palm oil has become increasingly present in consumer products, so that today, [more than half of the products](#) sold in the U.S. contain palm oil. These include personal care products, cosmetics, detergents, and a full range of food products. And the demand is growing. According to GlobeNewsWire, the palm oil market [is expected to surpass \\$98.8 billion](#) by 2030.

As the use of palm oil has expanded – making the cultivation of the crop more lucrative – so have the issues surrounding its cultivation. Chief among these is the [large-scale conversion](#) of native forests to oil palm plantations, with the incumbent loss of species and diversity, loss of critical habitat, soil erosion, and the pollution of natural resources. Labor issues [have also been associated](#) with the cultivation of oil palm, including worker exploitation, child labor, forced labor, and human trafficking.

However, that being said, the increase in the use of palm oil has also had some [positive impacts](#), including the building of rural economies, a reduction in rural poverty, and an increase in food security for rural communities.

In an attempt to address the environmental issues associated with palm oil, some have turned to biotechnology, developing synthetic biology (synbio) replacements for palm oil, citing climate change as their primary motivation and emphasizing sustainability in their marketing materials. And although the negative issues associated with palm oil are real and compelling, efforts such as the development and commercialization of synbio palm oil replacements do not happen in a vacuum and are not without their own negative repercussions. How are these products manufactured, and are they really sustainable? How will [biotechnology developments](#) in the global north affect livelihoods in the global south?

This is prompting some to question whether we shouldn't instead be seeking a more [sustainable, holistic solution](#), one that addresses both the environmental and socio-economic issues. In an [April 2019 commentary](#) entitled “Harnessing synthetic biology for sustainable development,” which appeared in Nature Sustainability, researcher Katherine French discussed the potential negative consequences of synthetic biology, specifically,

“If left unchecked, synthetic biology-based industries could exploit the genetic resources of non-Western countries by producing synthetic versions of natural products, thereby increasing global inequality.” She added, “The mass production of plant compounds using synthetic biology, including vanilla, palm oil and artemisinin, could affect the livelihoods of millions of farmers worldwide.”

Below are brief overviews of several developers of synbio palm oil.

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C16 Biosciences

C16 Biosciences (C16) was founded in 2017 with the goal of finding a synthetic biology replacement for palm oil – in both food and body care. The company's name is derived from the [16-carbon fatty acid](#) that is a significant component of palm oil. In 2020, C16 closed a [\\$20 million Series A investment round](#) led by Breakthrough Energy Ventures, which is the venture capital investment firm founded and led by Bill Gates.

C16's first commercial product, which was launched earlier this year, is torula oil, the name of which comes from the yeast that was genetically modified. The oil is being [marketed under the brand Palmless](#). Also launched was a body care product featuring torula oil, [which is branded as](#) Save the F#\$%ing Rainforest, a nourishing oil for face, body and hair.

In addition, C16 has also collaborated with Haeckels, a British skincare and fragrance brand, and the materials science company Pangaia to launch The Rewild Body Block, a bar soap made with Palmless's torula oil. The soap is reportedly scented with natural oils to recreate the smell of a "[rainforest burning down](#)." The initial release of the soap has been limited to 200 blocks and is priced at £30 (\$40).

Geno/Genomatica

Established in 1989, Geno (formerly known as Genomatica) was a [founding member](#) of the SynBio Coalition, a biotechnology advocacy group, and has been on a decades-long mission to use biology to [transform the way in which materials are made](#). Through the years, Geno has developed and launched a number of synbio products, including [Brontide butylene glycol](#), which is used in personal care products to enhance the textures of moisturizers or increase antimicrobial efficiency.

In 2022, Geno and Unilever announced a partnership to scale and commercialize [synbio alternatives](#) to palm oil "cleansing ingredients." With a joint investment of \$120 million, the initiative marks [Unilever's largest commitment](#) to date for the development of synbio palm oil.

Xylome

Xylome is a genetic engineering company based in Madison, Wisconsin. According to the company's CEO, "Xylome was founded to make sustainable ingredients for large markets using [the power of yeast synthetic biology](#)." After reportedly working on a palm oil replacement for 10 years, Xylome has developed a [synbio replacement](#) for refined, bleached, and deodorized (RBD) palm oil using a [patented strain](#) of *Lipomyces*.

The oil will initially be [marketed via two products](#): the trademarked Yoil, a Lipomyces oil extract; and Yoil-Cream, which is a combination of Yoil and a number of other ingredients, including citric acid, glycerin, and Vitamin E. In April, Xylome announced that it had received [Certified Biobased Product Labels](#) issued through the [USDA's BioPreferred Program](#) for both products.

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