



# komaplastics

The 2020 iGEM Team at UCSC:

Our team of scientists and engineers is working to create a plastic from bacterial cellulose for agricultural use. Plastic waste is an environmental emergency as well as a pressing humanitarian issue. Out of 63,000 Mt of plastic waste, 79% is destined for landfills. This toxifies the environment by contributing to pollution and harms the health of people in the vicinity of landfills. Therefore, our team is currently working on producing a fully biodegradable plastic from bacterial cellulose to help combat plastic waste.

Plastic bed mulches are used in agriculture and are essential on strawberry farms. To name a few key factors, bed mulches absorb sunlight, prevent weed growth, and increase water retention. These plastic mulches are laid over many acres of land and cannot be reused. Farmers are forced to send tons of this plastic mulch to landfills because many recycling facilities for bed mulches are no longer running in the United States. Producing a biodegradable bed mulch is a vital initiative to reducing plastic waste.

To produce a biodegradable plastic, we are incorporating a cellulose binding module (CBM) alongside a plasticizing molecule in order to turn brittle cellulose into a stretchy and strong bed mulch.