

# Biological matrix composites from cultured plant cells

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## Scientific Achievement

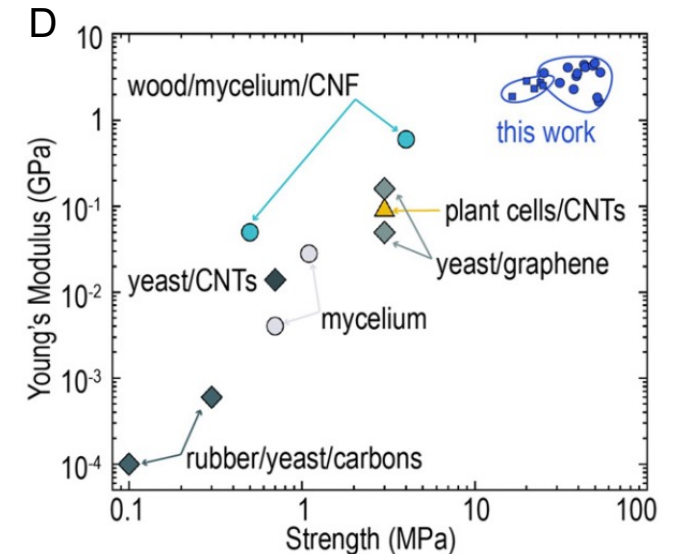
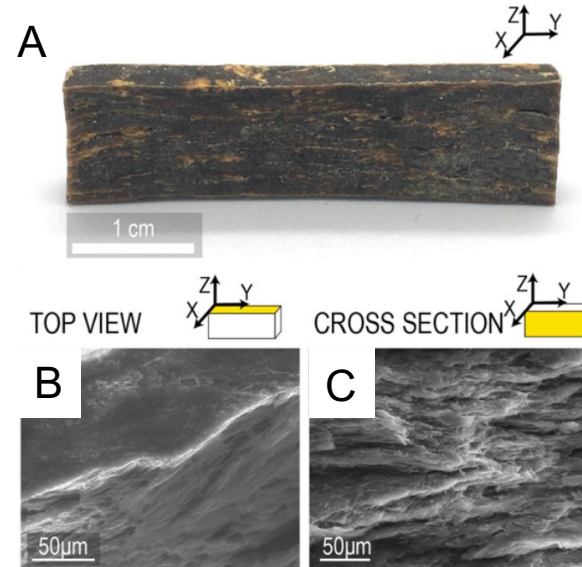
- We created biocomposites from cultured plant cells that have stiffness and strength comparable to woods and commodity plastics.

## Significance and Impact

- Our biocomposite materials are biodegradable, reusable, can be manufactured on site, produce zero waste, and require no arable land.

## Technical Details

- A compression/dehydration process arranges the cells into lamellar structures.
- The introduction of fillers expands attainable functionalities.
- Our fabrication process is low energy and requires no harsh chemical treatments.



(A) Photograph of the biocomposite. (B and C) SEM top and cross-sectional views of the anisotropic microstructure. (D) Comparison of mechanical properties of this work and literature-reported biocomposites in which microorganism cells serve as a matrix: yeast-based composites represented with rhombuses and mycelium-based materials with circles.