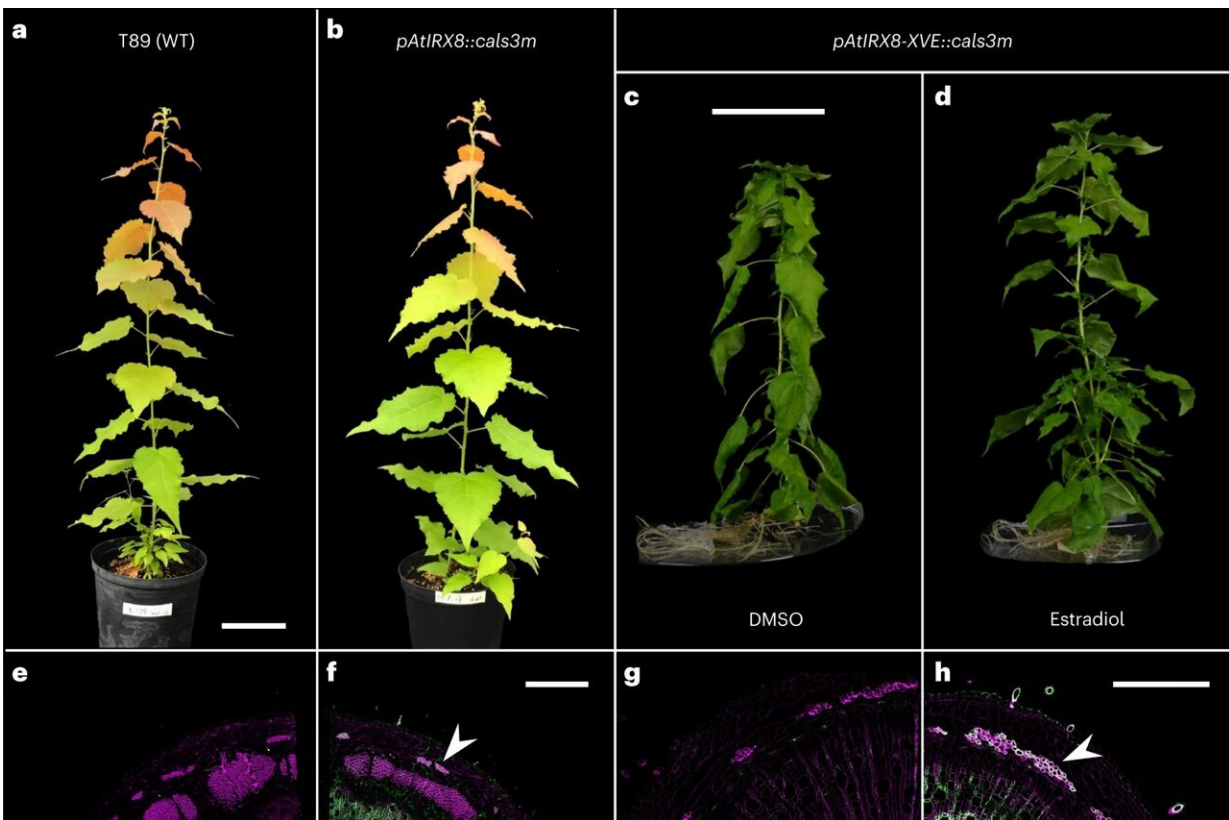


Scientists use naturally-occurring polymer to modify wood and boost biomass conversion

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Callose can be effectively and stably integrated in poplar woody biomass. **a,b**, Representative pictures of individuals from WT (**a**) and constitutive lines (**b**) after 6-weeks growth on soil in greenhouse conditions ($n = 5$). **c,d**, Representative pictures of in vitro-grown inducible line individuals under mock conditions (DMSO, **c**) vs its estradiol counterpart inducing callose synthesis (**d**) 12 weeks after shoot propagation ($n = 10$). **e-h**, Callose immunolocalizations on stem cross-sections from individuals presented in **a-d**, and their associated close-ups on similar genetic background (**i-l**). Callose positive signal is displayed in

green (note the signal extending to phloem fibers in transgenic lines in **f** and **h**, arrowheads) and magenta represents calcofluor cell wall counterstaining (**i-l**). **m**, PACE callose detection on two independent constitutive (Const.) and inducible lines following estradiol induction (Ind. est.) vs their WT and mock (DMSO) controls. Each migration row represents a pool of five clonal individuals. “*” represents a laminaribiose labeling artifact. **n**, Callose linkage analysis on two independent constitutive (Const.) and inducible lines following estradiol induction (Ind. est.) vs their WT and mock (DMSO) controls. Growth conditions: iv, in vitro; GH, greenhouse. Callose is represented in percentage per mole of total detected linkages. Individual data points represent technical replicates using cell wall extracts obtained by pooling five (GH) or ten (iv) clonal individuals. Statistical analysis was done using one-way ANOVA ($P = 2.37 \times 10^{-12}$) followed by Tukey’s multiple comparisons test. Significance values for P

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