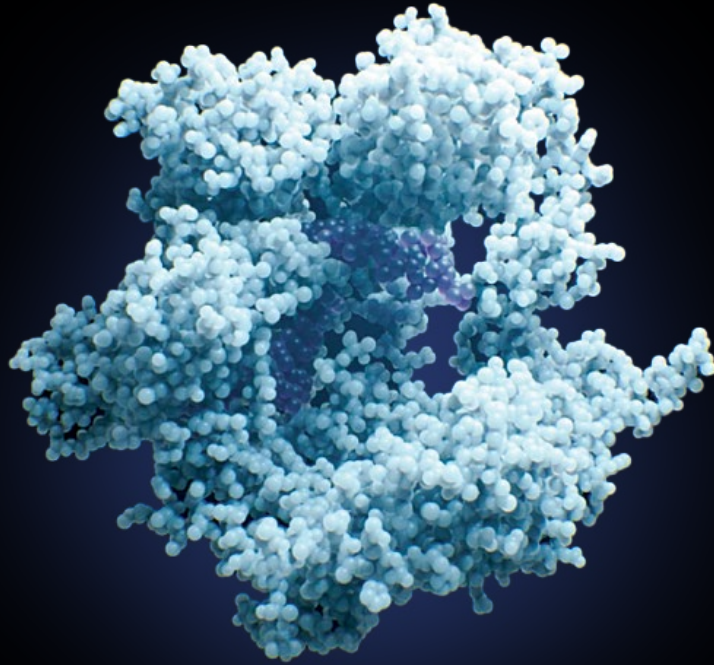
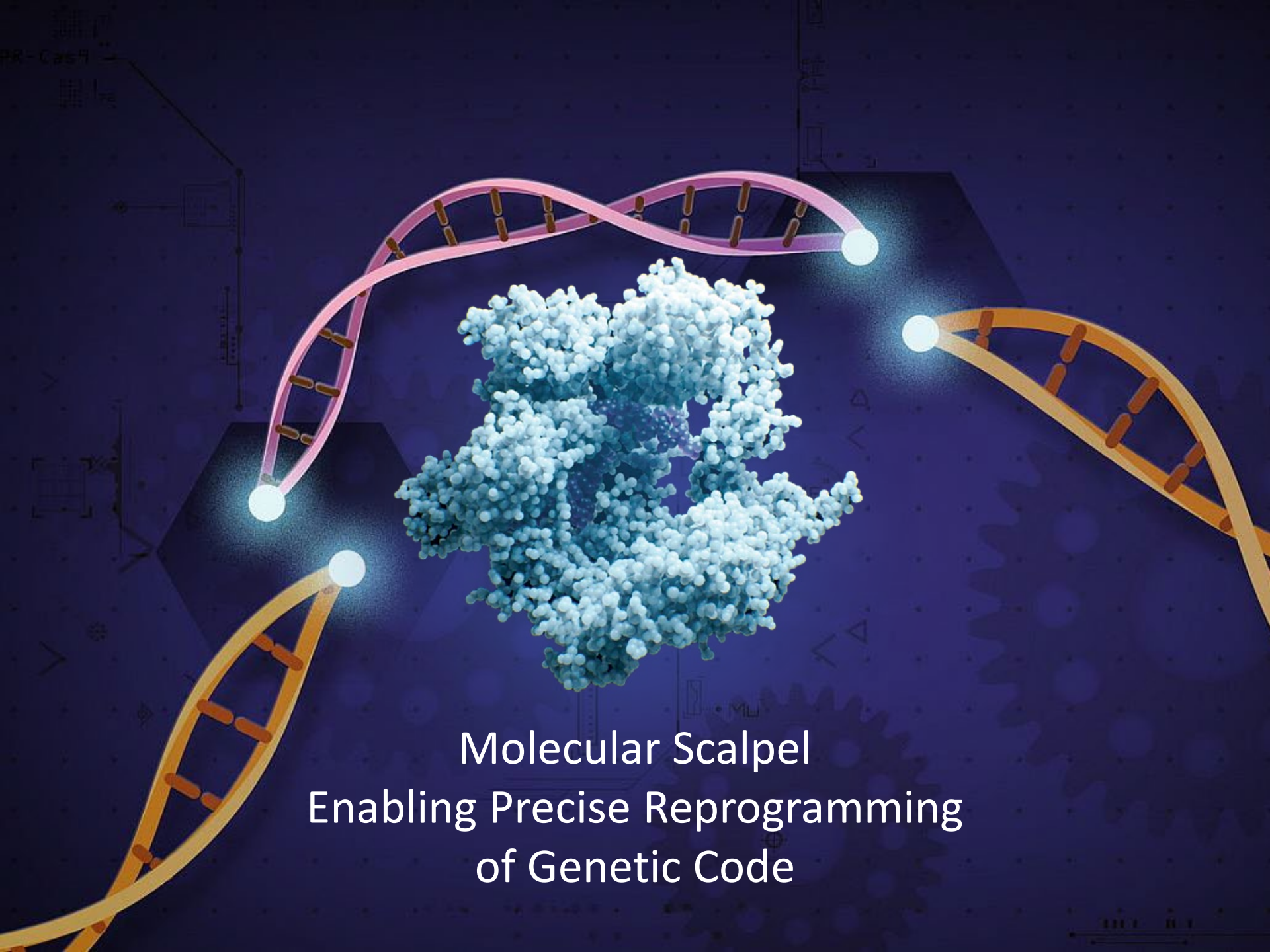


# C R I S P R



The Genome Editing Revolution



Molecular Scalpel  
Enabling Precise Reprogramming  
of Genetic Code





**NATURAL  
RESOURCE  
PROTECTION**



# Improving the World Through Plant Science Innovation



# NC STATE UNIVERSITY

**Technology**

**Utilization**

**Sustainability**

**Artificial Intelligence**

**CRISPR**

**Improved Tree Variants**



Timber

Chemical

Fiber



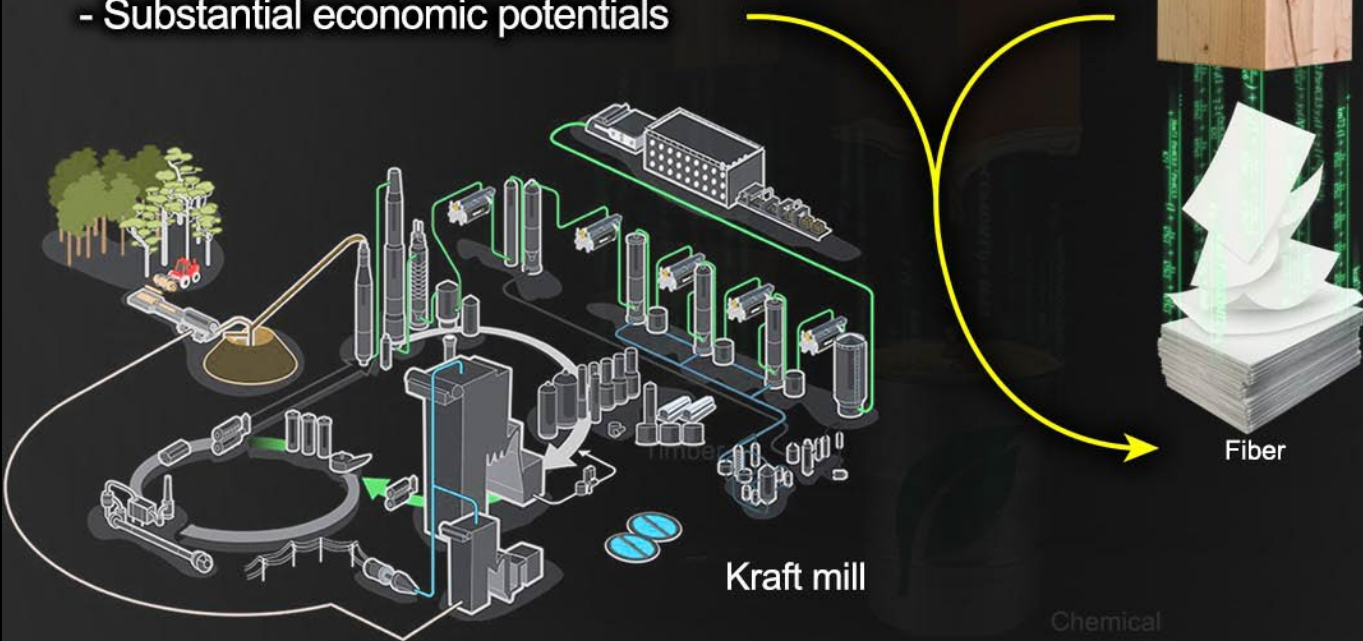
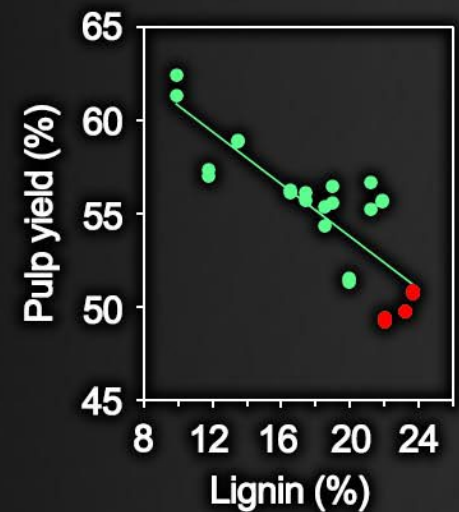
# Editing Trees for Sustainable Fiber Production

## De-Bottleneck Pulp mills

- Increase sustainable fiber production by up to **40%**
- Reduce carbon dioxide emission by up to **31%**
- Substantial economic potentials



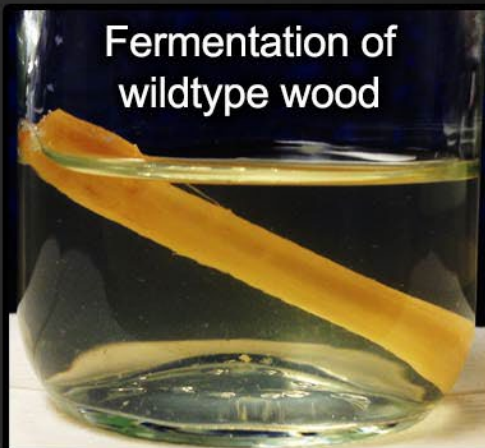
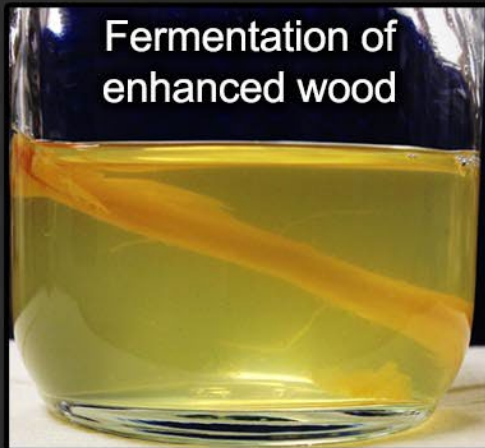
Editing reduced lignin in wood increases fiber production



Kraft mill

Fiber

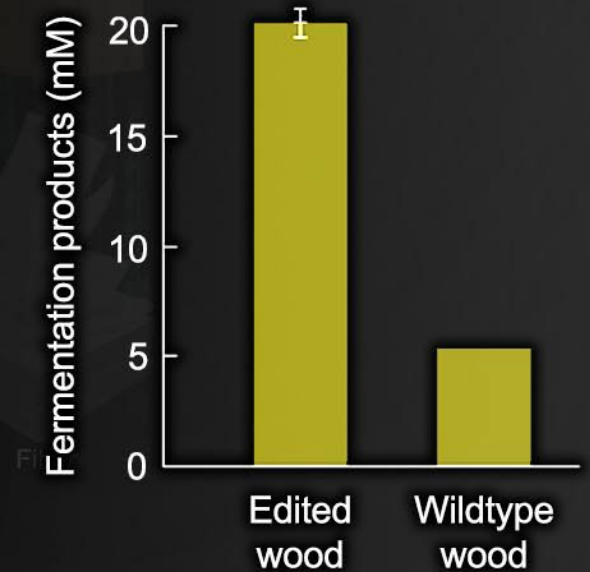
# Editing Trees for Sustainable Biofuels Production



Timber

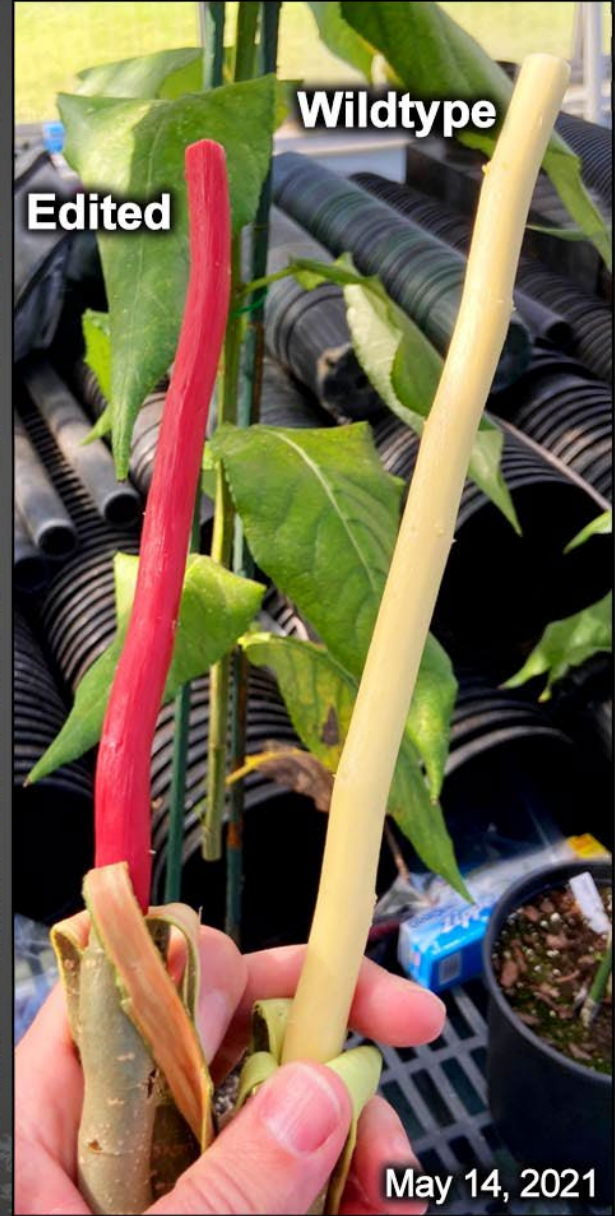
Chemical

CRISPR-edited wood has **360%** biofuels production efficiency compared to wildtype wood





# Harvesting of Edited Poplar with Enhanced Wood





# The Next Decade...



Science

Technology

Applications

Products

Acceptance

Academia



Government

Industry



Society

