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U.S. Department of
Transportation



Project Title: A Novel Approach to Increase Biomass Yield through Altering Prohibitin Expression

Dr. Joshua Yuan

Project Goal

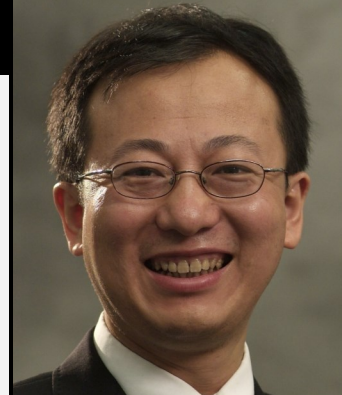
The goal of this project is to develop a new strategy for feedstock improvement to increase biomass accumulation. This research aims to translate the newest discovery of a novel mechanism for plant biomass regulation into bioenergy feedstock. The team discovered over-expression of one of the prohibitin genes (the PHB-8 homologs) in Arabidopsis that can significantly increase plant size and biomass accumulation, assumingly due to the preferred utilization lipid over sugar as energy source.

Objectives:

- 1) To investigate if the PHB-8 homologs in monocot have the same function for biomass regulation
- 2) To identify other genes in the PHB8 related pathway that could be used to increase biomass.

Project Outcomes

- Results showed that PHB8 can improve plant biomass and seed yield. The research has characterized the molecular function of PHB8 genes. The team discovered overexpression of one of the prohibitin genes (the PHB-8 homologs) in Arabidopsis that can significantly increase plant size and biomass accumulation, due to the stabilization of ATPase to promote the energy efficiency in plants.
- Patent
US Full patent applied by Joshua Yuan for 'Prohibitin genes to improve plant biomass and seed yield'.
Patent is licensed to Benson Hills Biosystems for engineering crops and bioenergy feedstock to improve seed and biomass yield.
- Disclosure
Joshua Yuan. Prohibitin genes to improve plant biomass and seed yield.



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