

Commercial licensing of a BESC global genetic regulator of aromatic biosynthesis

Background

- BESC has been studying SNPs and key compositional and conversion phenotypes in the natural variation population in *Populus* using GWAS (genome-wide association studies).
- A study of rare SNPs identified an unusual paralog in *Populus* which had taken on new regulator functions.

Approach

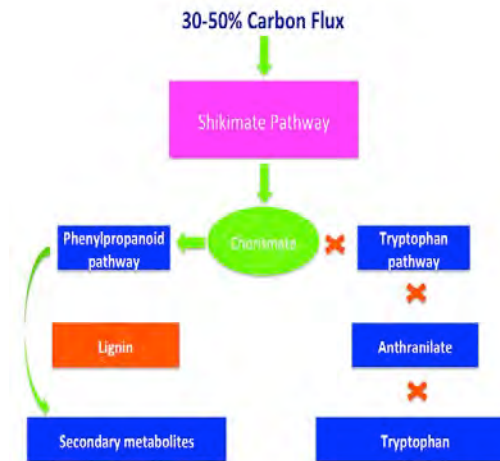
- BESC researchers discovered a genetic regulator which singly modulates carbon flow between four major metabolic pathways in plants. Manipulation of the regulator leads to reduced lignin content, increased biofuels production, and increased digestibility.
- This protein was found to be a global genetic regulator of the phenylpropanoid, tyrosine, flavonol and tryptophan biosynthesis pathways.

Outcome

- Patent applications have been filed.
- Follow-on work is testing the utility in other plant species.

Significance

- The technology is being licensed to two companies who plan to commercialize the technology:
 - GreenWood Resources is being granted a license for use of the technology in woody cellulosic biofuels production.
 - Forest Genetics International is being granted a license to deploy the technology in their alfalfa forage product lines. Alfalfa hay and forage is grown on more than 47 million acres across the USA.
- Increasing biofuel yield or forage digestibility can lead to reductions in land use for these crops and thus contributing to long term sustainability.



Genetic technology for metabolic engineering