

## Engineering of biofuel crops for improving alternative energy production

Xiaoyan Yin, Zhanyuan Zhang  
University of Missouri-Columbia

Genetic engineering plays a unique and important role in improving crop traits. Teaming up with three other laboratories (Drs. Gary Stacey, Xu Dong, and Monty Kerley) at MU and several other institutions in Missouri, we are developing an engineering approach to improve biofuel production as an alternative source of energy. A two-year funded project with a total of \$355,635 has been awarded to our MU team. One of the most important crops in this project is switchgrass (*Panicum virgatum*). To be successful in this project employing engineering approach, it is essential to develop an efficient *Agrobacterium*-mediated transformation process in switchgrass. In spite of previous reports, *Agrobacterium*-mediated transformation of this crop has been proven to be very difficult. Therefore, since our project started we have optimized a number of critical conditions affecting switchgrass transformation. These conditions included the switchgrass genotypes, cocultivation temperatures and medium salt concentrations, *Agrobacterium* strains, transformation vectors, selection system and selective agents. We also plan to examine the impact of types of promoter driving selectable markers on transformation. These works will lay a good foundation for efficient transformation of switchgrass via *Agrobacterium*. Some of the significant progresses will be presented.