

CHALLENGES OF FLUORESCENT TECHNOLOGY USE IN PLANT SPECIES

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Many new technologies are revolutionizing the study of genetics impacting both research and practical application. Use of fluorescence to monitor various reactions is a recent technology increasingly being used both *in vitro* and *in vivo*. We recently cloned a poplar metal-transport protein and modified it by adding red and cyan fluorescing proteins to the N- and C- terminal ends of the native protein. Subsequently, the protein was successfully expressed in two plant species including the hybrid poplar clone INRA 717-1B4 (*P. tremula* x *P. alba*) and *Arabidopsis thaliana*. The intent of this process was to create a bio-sensor to monitor heavy metals. After gene expression and fluorescence was confirmed, several challenges were identified when using fluorescence in plants. These include auto-fluorescence, differing cell physiology among tissues, physical location of the fluorescence, and changes of three-dimensional tissue aspects. Practical recommendations for use of this technology will be discussed.