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Use of fungal and firefly genes to enhance illumination in plants

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Bioluminescence is a phenomenon by which light is produced in living organisms through chemical reactions. The enzyme luciferase is responsible for carrying out this reaction and producing light. Some insects and fungi exhibit this phenomenon naturally. By incorporating the genes of these organisms into a plant, the plants can be made to illuminate, as plants do not exhibit natural bioluminescence. Researchers have carried out this process in tobacco plants and were successful in producing illumination, which is clearly visible in a dark room. The combination of genes from both fireflies and fungi will enhance the illumination in plants. This technique was also used to light up flowering plants like periwinkle. These plants emit a green fluorescent light after being genetically modified with genes from the fungal species Neonothopanus nambi. This concept of “planterns” (plant lanterns) is widely researched upon with the possibility of applying it to trees. This can prove to be beneficial as glowing trees can be planted on the streets to act as a light source. Additionally, they will eventually help conserve electric energy. As of now, these planterns require the luciferase enzyme, externally, to maintain the glow for about 6-8hrs. However, some new methods are being developed to counter this. The invention of a fully functional plantern will not only help save energy but will also let biologists study the plant metabolism as the system will be visible directly. The applications are wide and will benefit mankind in a lot of ways.

Keywords: Planterns, Bioluminescence, Firefly, Fungi, Luciferase

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