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(54) Title: BIOLUMINESCENT PLANTS AND METHODS OF MAKING SAME

(57) Abstract: A genetically modified plant cell containing a heterologous nucleotide sequence encoding a bioluminescent polypeptide, which is expressed in amount sufficient to produce at least about 750,000 photons of visible light/mm²/second, is provided, as is a visibly bioluminescent transgenic plant, which contains such a genetically modified plant cell. Also provided is a recombinant nucleic acid molecule, which contains a plant translational enhancer operatively linked to a nucleotide sequence encoding a bioluminescent polypeptide. In addition, methods of producing a genetically modified plant cell that is visibly bioluminescent introducing a transgene encoding a bioluminescent polypeptide into a plant cell, whereby the bioluminescent polypeptide is expressed at a level that produces at least about 750,000 photons of visible light/mm²/second are provided, as are kits containing such visibly bioluminescent compositions.

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