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(54) Title: BIOSYNTHESIS OF ROSE AROMAS

(57) Abstract: The present invention relates to host cells comprising a first vector comprising a polynucleotide sequence encoding mevalonate pathway genes, and a second vector comprising a polynucleotide sequence encoding a geraniol diphosphate synthase (GPPS) and a Nudix hydrolase. In an embodiment, the host cell is an E. coli cell; the mevalonate pathway genes are HMG-CoA synthase (hmgS), acetoacetyl-CoA thiolase (afdB), HMG-CoA reductase (hmgR), mevalonate kinase (mevK), phosphomevalonate kinase (pvrK), mevalonate pyrophosphate decarboxylase (pmd) and (isopentenyl diphosphate) IPP isomerase (/d/); the GPPS is E. coli IspA comprising a S80F mutation (ispA_S80F); and the Nudix hydrolase is RhNUDXI isolated from Rosa hybrida. Also disclosed are methods and kits for producing geraniol and geranyl acetate comprising culturing the host cells thereof. Furthermore, engineered fusion proteins comprising RhNUDXI and ispA_S80F are disclosed.



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