An expression construct for sensing cell density and substrate availability and its use in conversion of hydroxycinnamic acids

Abstract

An Expression system; isolated nucleic acid molecule or host cell comprising: (i) A first gene encoding for a first enzyme linked to a first promoter, wherein the first promoter is a time delay promoter; (ii) A second gene encoding for a second enzyme capable of using the product generated by the first enzyme as a substrate, wherein the second gene is operably linked to a second promoter, wherein the second promoter is inducible by the product generated by the first enzyme; (iii) Optionally, a third gene encoding a transcription factor that represses expression of the second gene in the absence of the product generated by the first enzyme, wherein the third gene is operably linked to a third promoter that regulates expression of the third gene; and its use in producing a product such as hydroxybenzaldehyde.

Figure 1