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(54) Title: METHODS FOR PRODUCING BIOCHEMICALS USING ENZYME GENES DERIVED FROM A STRAIN OF BREVUNDIMONAS, AND COMPOSITIONS MADE THEREBY

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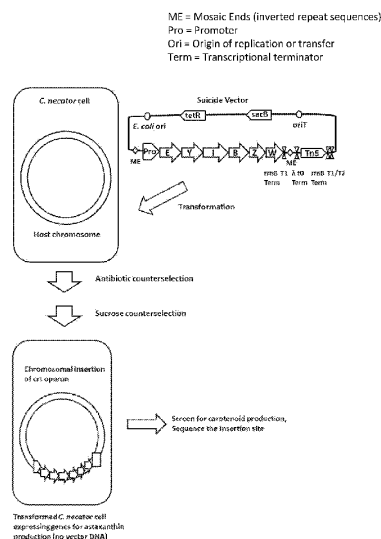


FIGURE 6. Transformation and chromosomal insertion of the operon into the host cell using transposon mutagenesis.

(57) Abstract: A crtW gene from a strain of Brevundimonas is disclosed that encodes a novel ketolase for carotenoid synthesis. An exemplary synthetic operon containing additional relevant carotenoid gene sequences is also provided, where the expression of the synthetic operon is used to produce ketocarotenoids. Suitable DNA expression constructs derived from these sequences are inserted into an expression host for expression. The expression product is a ketolase enzyme that is operable for transforming beta-carotene into canthaxanthin and astaxanthin.

[Continued on next page]

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