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(54) Title: GENE ENCODING POLYMER SYNTHASE AND A PROCESS FOR PRODUCING POLYMER

SEQ ID NO: 1

MQQFVNSLSLGGQDQSDAPHPLTGAWSQLMSQTNQLQLQSSLYQQQLGLWTQF
LGQTAGNDASAPSAKPSDRRFASPEWDEHPFYSLKQSYLQTSKWMMLVDKT
QIDESAKDKLSFAIRQYLDAMAPSNFMLTNPVVKRAIETQGESLVEGMKNMM
EDIQKGHISMSDESKFOIGKNLVVTPGEVVFNRNELLQYTPTEKVVHEKPLLFVP
PCINKYYLMDLQPDNSMVRHFVGGQYRVFLVSWRSVAVPEMKNFTWETIEYKGV
FAAAEAVQKITKQPTMNLGFCVGGVILTALCVAQAKGLKYFDSATFMTSLID
HAEPGEISFFIDEALVASREAKMAAGGIISGKEIGRTFASLRANDLVWNYVNNY
LLGKTPAPFDLLYWNDAVDLPLPMHTFMLRQFYNNALITPGAITLCGVPIIDSK
IDIPVYMFARAEDHIVLWSSAYSGLYSLGTPSRRFVLGASGHIAGSINPVTKDKR
NYWTNEQLPVNPEEWLEGAQSHPSWWDWDAWLAPQSGKQVPAPKMLGSK
EFPPLQAPGSYVLAKAMPVAAALN

Figure 1

(57) Abstract: Polyhydroxyalkanoate (PHA) synthase gene (SEQ ID NO:2) isolated from fresh water *Chromobacterium* sp. USM2, its amino acid sequence (SEQ ID NO: 1) and its use to produce polymers incorporating C3 to C7 monomer units, including poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) random copolymer P(3HB-co-3HHx), poly(3-hydroxybutyrate-co-3-hydroxyvalerate) random copolymer P(3HB-co-3HV) and P(3HB-co-3HV-co-3HHx) terpolymer. Production of polymer by expression of SEQ ID NO:2 in recombinant hosts including microorganisms such as *Cupriavidus* or *Pseudomonas*.

