Supplementary Methods

Plasmid Construction

All PCR products were cloned using the pT7Blue T-Vector system (Novagen). Overall correctness of the inserts was confirmed by DNA sequencing. Primer sequences for the PCR experiments are described. Underlined sequences in the primers indicate the restriction sites used for plasmid construction.

The subunit of rubisco, RbcS-2A, from *Lycopericon esculentum* (tomato) was used as a plastid targeting signal. The RbcS-2A fragment was amplified by PCR using cDNA of *L. esculentum* and the following primers; 5′-GTAGGATCCCCGGGTCGATGGCTTCCTCTGTCATTTCTTCAG-3′ and 5′-CTTGAGCTCTGATATCTGGTACCCAATTGCTCGTCAGACAAATCAGG-3′. The RbcS-2A fragment was inserted into *Bam*HI/*Sac*I digested pUC18 to yield pBMR002.

pUC18 was digested by *Pst*I/*Eco*RI and blunted followed by circularization to yield pUC-H, in which the multi-cloning-site was replaced by a *Hin*dIII site. pUC-E, in which the multi-cloning-site was replaced by an *Eco*RI site, was also constructed by digestion of the plasmid with *Hin*dIII/*Sac*I followed by blunting and self ligation.

A DNA fragment containing the 35S cauliflower mosaic virus promoter, GUS gene and nopaline synthase terminator (35S-GUS-NOS) was amplified by PCR using pBI221 (Clontech) as a template and the following primers; 5′-AAGCTTGCATGCCTGCAGGTCCCC-3′ and 5′-AAGCTTCCGATCTAGTAACATAG-3′. The *Hin*dIII digested amplified fragment was inserted into the *Hin*dIII site of pUC-H to yield pBI221H. pBI221E, in which there were *Eco*RI sites at the both end of 35S-GUS-NOS region, was constructed by the same strategy using the following primers; 5′-GAATTCGCATGCCTGCAGGTCCCC-3′ and 5′-GAATTCCCGATCTAGTAACATAG-3′.

pBSClaI, which was a pBluescript II KS^+ derivative and its multi-cloning site was replaced by a *Cla*I site, was constructed by PCR using pBluescript II KS^+ as a template and the following primers; 5′-CCATCGATTTCGCCCTATAGTGAGTCGTAT-3′ and

5′-CCATCGATTCCCTTTAGTGAGGGTTAATTG-3′. The PCR product was digested by *Cla*I and circularized by self-ligation to yield pBSClaI. The 35S-GUS-NOS fragment with *Cla*I sites at the both end was amplified by PCR using pBI221 as a template and the following primers; 5′-CCATCGATGCATGCCTGCAGGTCCC-3′ and 5′-CCATCGATTTCCGATCTAGTAACATAG-3′. The *Cla*I digested amplified fragment was inserted into the *Cla*I site of pBSClaI to yield pBS221C.

The F87T mutant of 3-ketoacyl-ACP synthase III (FabH) gene from *Escherichia coli* was amplified using pTrcFabH(F87T)[26] as a template and following primers; 5′-AGGTACCGTTTATACGAAGATTATTGGTACT-3′ and 5′-TGGTACCCTAGAAACGAACCAGCGCGGAGCC-3′. The *Kpn*I digested PCR product was inserted into *Kpn*I site of pBMR002 to yield pUrbcFabH. The *Bam*HI/*Sac*I fragment of pUrbcFabH was inserted into *Bam*HI/*Sac*I digested pBS221C to yield pBS221CrbcFabH.

The *Kpn*I/*Kpn*I fragment of the β-ketothiolase gene ($phaA_{Re}$) from *Ralstonia eutropha* (*Cupriavidus necator*) was amplified using *phb* locus of the organism as a template and the following primers; 5′-CTTGGTACCGTTACTGACGTTGTCATCGTACCGCCG-3′ and 5′-ATAGGTACCCCCCGGAAAACCCCTTCCTCATTTGCGC-3′. The *Kpn*I digested PCR product was inserted into the *Kpn*I site of pBMR002 to yield pUrbcPhaA. pUrbcPhaB which harbors the fusion of RbcS-2A and the NADPH-dependent acetoacetyl-CoA reductase gene ($phaB_{Re}$) from *R. eutropha* was constructed by the same strategy using the following primers; 5′-TAAGGTACCGTTACTCAGCGCATTGCGTATGACCG-3′ and 5′-TAGGGTACCAACCAGGCCGGCAGGTCAGCCCATATGC-3′. The *Bam*HI/*Sac*I fragments of pUrbcPhaA and pUrbcPhaB were inserted into *Bam*HI/*Sac*I digested pBI221 and pBI221E to yield pBI221rbcPhaA and pBI221ErbcPhaB, respectively.

The wild-type and ST/QK mutant of PHA synthase genes from *Pseudomonas* sp. 61-3 were amplified using the following primers; 5′-TCAGGTACCGTTAGTAACAAGAATAGCGATGACTTGA-3′ and

5′-TCGGGTACCACTCAACGTTCATGCACATACGTGCCCG-3′. The *Kpn*I fragments were inserted into pBMR002 to yield pUrbcPhaC1WT and pUrbcPhaC1STQK, respectively. The *Bam*HI/*Sac*I fragments of pUrbcPhaC1WT and pUrbcPhaC1STQK were inserted into *Bam*HI/*Sac*I digested pBI221H to yield pBI221HrbcPhaC1WT and pBI221HrbcPhaC1STQK, respectively.

The *Hin*dIII/*Eco*RI fragment of pBI221rbcPhaA was inserted into pBI121 (Clontech) followed by the insertion of *Eco*RI fragment of pBI221ErbcPhaB to yield pBI121rbcAB. The *Hin*dIII fragments of pBI221HrbcPhaC1WT and pBI221HrbcPhaC1STQK were inserted into pBI121rbcAB to yield pBIC1ABWT and pBIC1ABSTQK, respectively (Figure 1). The *Cla*I fragment of pBS221CrbcFabH was inserted into pBI121rbcAB followed by the insertion of the *Hin*dIII fragments of pBI221HrbcPhaC1STQK to yield pBIHC1AB, which is shown in Figure 1.