Supplementary Materials: Enhanced (–)-α-Bisabolol Productivity by Efficient Conversion of Mevalonate in *Escherichia coli*

Soo-Jung Kim, Seong Keun Kim, Wonjae Seong, Seung-Gyun Woo, Hyewon Lee, Soo-Jin Yeom, Haseong Kim, Dae-Hee Lee and Seung-Goo Lee

Table S1. List of primers used in this study

Name	Sequences
MM-VF	GGGCCTGAAAGTGGATTAAGATCCAATAAGGAGGTCA
MM-VR	CGCTGCAGCTCACCATCGGATGCCCCCCTCG
MM-IF	CGAGGGGGGCATCCGATGGTGAGCTGCAGCG
MM-IR	TGACCTCCTTATTGGATCTTAATCCACTTTCAGGCCC
SA-VF	TGAGAATTTAGGAGGTTAAGATCCAATAAGGAGGTCA
SA-VR	CATATCCTTTTCTTGTCATCGGATGCCCCCTCGAATTCG
SA-IF	CGAATTCGAGGGGGCATCCGATGACAAGAAAAGGATATG
SA-IR	TGACCTCCTTATTGGATCTTAACCTCCTAAATTCTCA
pBBR1-VF	ACAAACTCTTGTCGTGACTGGGAAAACCC
pBBR1-VR	TGCCGCTTCGTCCTGTGTGAAATTGTTATC
pBBR1-IF	TCACACAGGACGAAGCGGCATGCATTTACG
pBBR1-IR	CAGTCACGACAAGAGTTTGTAGAAACGCAA
Didi-V-F	CTACATCATCCAGCGTAATAAATAACCAATACGCAAACCGCC
Didi-V-R	CCGGATGATTAATTGTCAAAACGCCATGAGCGGCCTC
Didi-I-F	GAGGCCGCTCATGGCGTTTTGACAATTAATCATCCGG
Didi-I-R	GGCGGTTTGCGTATTGGTTATTTATTACGCTGGATGATGTAG
gapA-gRNA-F	ACTAGTATTATACCTAGGAC
gapA-gRNA-R	CCATGTAATCAGCGTCTAACGTTTTAGAGCTAGAAATAGC

atggtgagctgcagcgcgccgggcaaaatttatctgtttggcgaacatgcggtggtgtatggcgaaaccgcgattgcgtgcgcggtggaactgcg
cacccgcgtgcgcgcggaactgaacgatagcattaccattcagagccagattggccgcaccggcctggattttgaaaaacatccgtatgtgagcgc
ggtgattgaaaaaatgcgcaaaagcattccgattaacggcgtgtttctgaccgtggatagcgatattccggtgggcagcggcctgggcagcagcg
cggcggtgaccattgcgagcattggcgcgctgaacgaactgtttggctttggcctgagcctgcaggaaattgcgaaactgggccatgaaattgaaa
ttaaagtgcagggcgcggcgagcccgaccgatacctatgtgagcacctttggcggcgtggtgaccattccggaacgccgcaaactgaaaaccccg
gattgcggcattgtgattggcgataccggcgtgtttagcagcaccaaagaactggtggcgaacgtgcgccagctgcgcgaaagctatccggatctg
attgaaccgctgatgaccagcattggcaaaattagccgcattggcgaacagctggtgctgagcggcgattatgcgagcattggccgcctgatgaac
gtgaaccagggcctgctggatgcgctgggcgtgaacattctggaactgagccagctgatttatagcgcgcgcgcggcgggcgcgtttggcgcgaa
aattaccggcgcgggcggcggcggctgcatggtggcgctgaccgcgccggaaaaatgcaaccaggtggcggaagcggtggcgggcgcgggc
ggcaaagtgaccattaccaaaccgaccgaacagggcctgaaagtggattaa

Figure S1. Nucleotide sequence of the *E. coli* codon-optimized *mvaK1* gene derived from *Methanosarcina mazei*

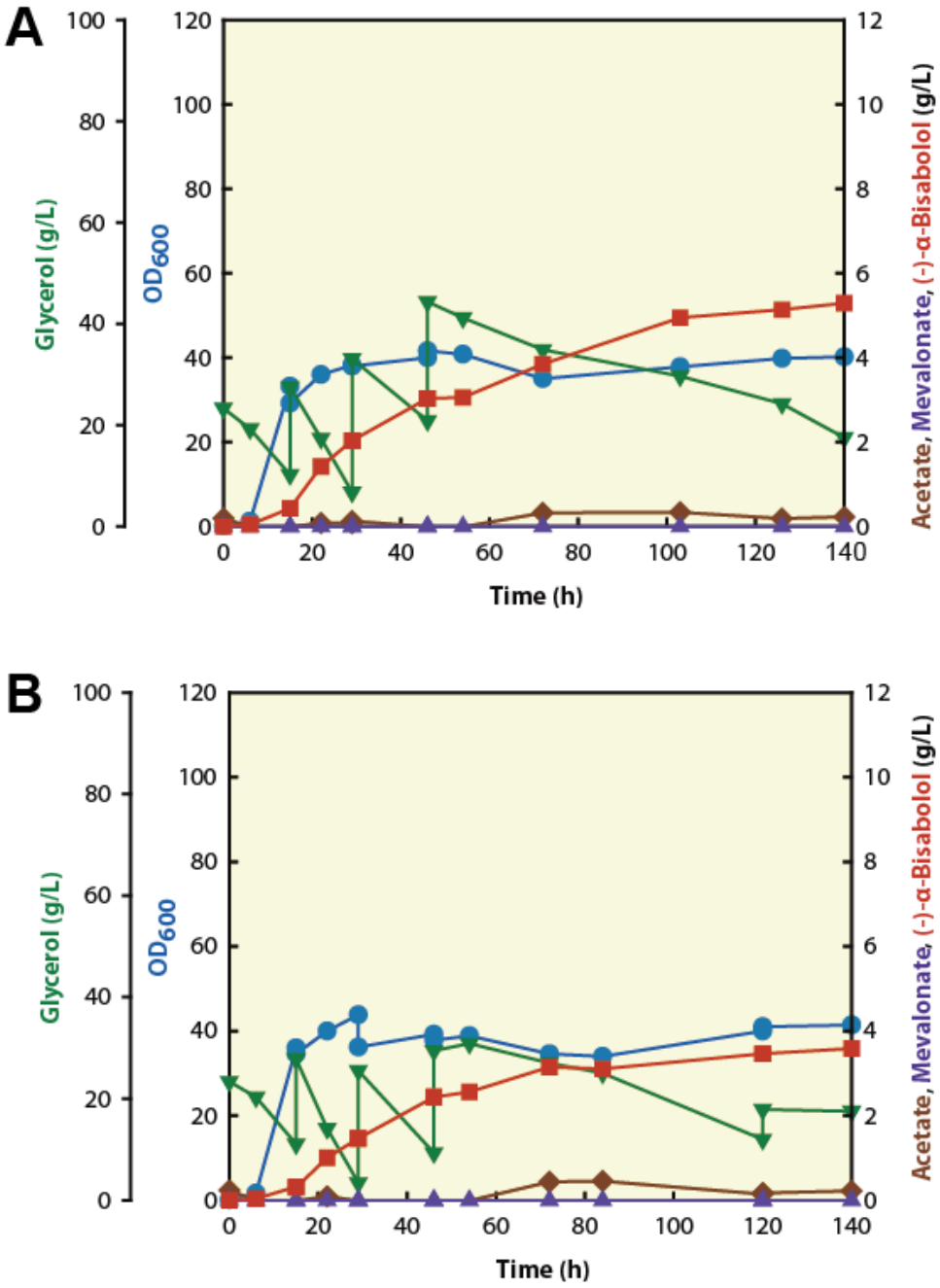

Figure S2. Fed-batch fermentation of the engineered *E. coli* DH5α, *E. coli* DH5α harboring pTSN-Bisa-Mm-GapC and pSSNDidi-MrBBS-IspA (A), and pTSN-Bisa-Mm-GapC, pCas9-sgRNA-GapA and pSSNDidi-MrBBS-IspA (B). The fed-batch fermentation was performed in TB medium and 20% (v/v) of *n*-dodecane using two-phase culture at 30°C and pH 7.0. After depletion of glycerol initially added, glycerol was fed intermittently into the bioreactor during fermentation. An agitation speed of 1,000 rpm and an aeration rate of 1 vessel volume per minute were maintained throughout the cultivation. After 6h cultivation, 0.025 mM of IPTG was added to the bioreactor.