Supplementary Information

Figure S1 Growth and PHA production in shake flask of *P. putida* A514 grown on M9 medium with different nitrogen concentrations. Growth and vanillic acid (VA) consumption in M9 medium with either high N (1 g/L) or low N (65 mg/L) are displayed on the curve graph, while the total PHA titer was determined at the end of fermentation and is indicated using a histogram.

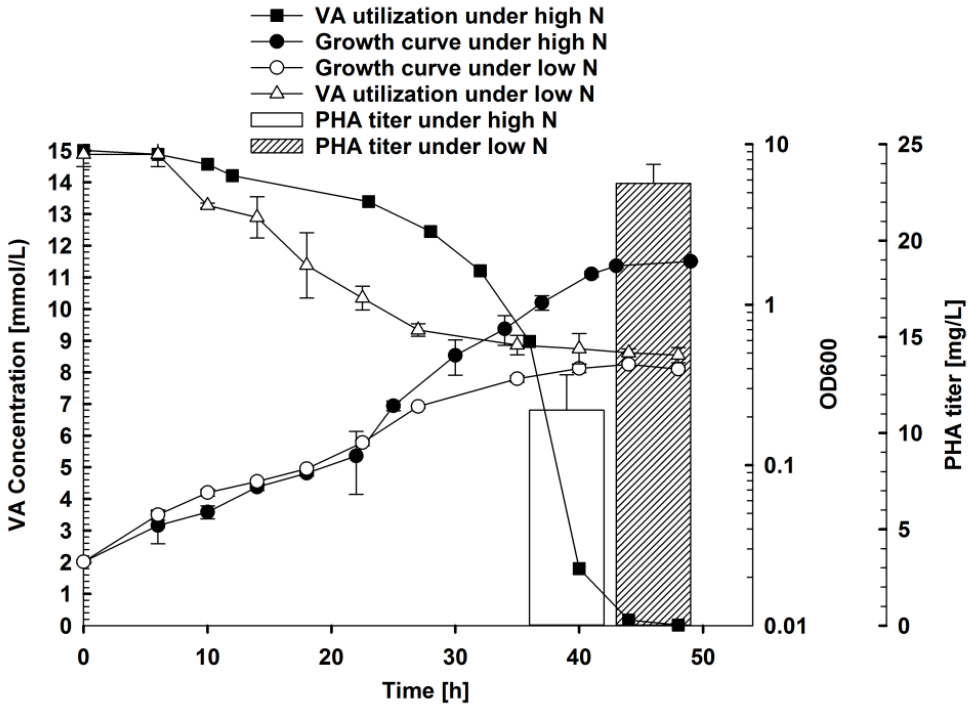

Figure S2 Organization of the PHA biosynthetic genes of *Pseudomonas putida* KT2440 and A514. Percentage numbers inside the genes represent the percent identity with respect to the proteins of *P. putida* KT2440.

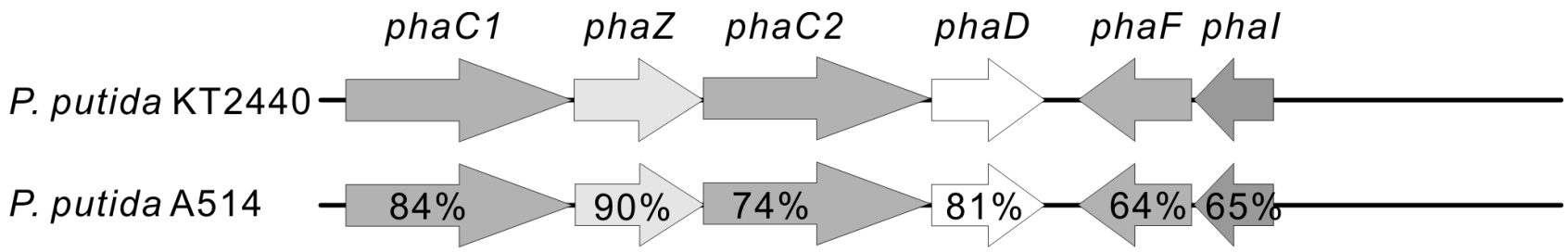

Figure S3 Production of *mcl*-PHAs in shake flask from A_{Pvan}, $A_{phaJ4C1}$ and $A_{alkKphaGC1}$ under high nitrogen (A) and low nitrogen (B) conditions. Strain growth and vanillic acid consumption are exhibited in a curve graph, whereas the PHA titer is indicated using a histogram. Fermentations were conducted in shake flasks at 30 ℃ and 200 rpm in M9 medium with 15 mM vanillic acid. The nitrogen concentration for the high N condition was 1 g/L, whereas the concentration under low N was 65 mg/L. VA: vanillic acid.

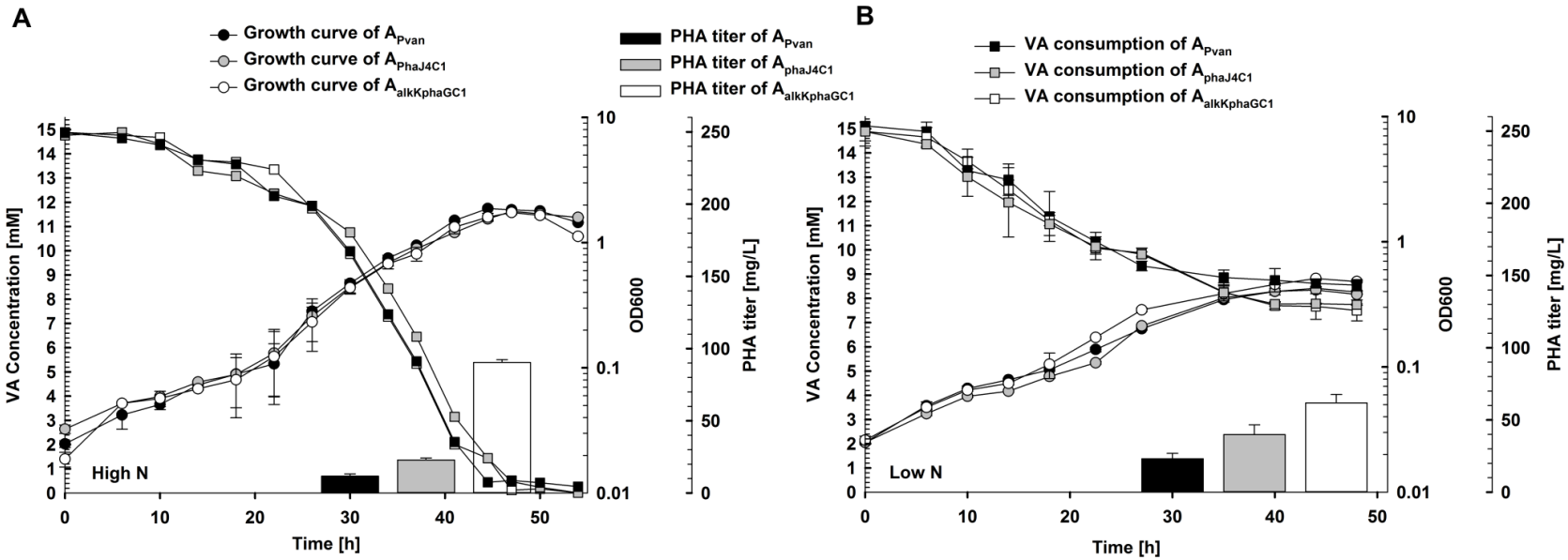

Figure S4 Production of *mcl*-PHAs in shake flask from A_{R_PxylA}, $A_{xyl\_PhaJ4C1}$ and $A_{xyl\_alkKphaGC1}$ under high nitrogen (A) and low nitrogen (B) conditions. Strains were grown in 15 mM vanillic acid M9 medium under high N (1 g/L) or low N (65 mg/L). A final concentration of 2 mM xylose was introduced at the mid exponential phase (OD600 ~0.7) to induce the relevant genes overexpression.