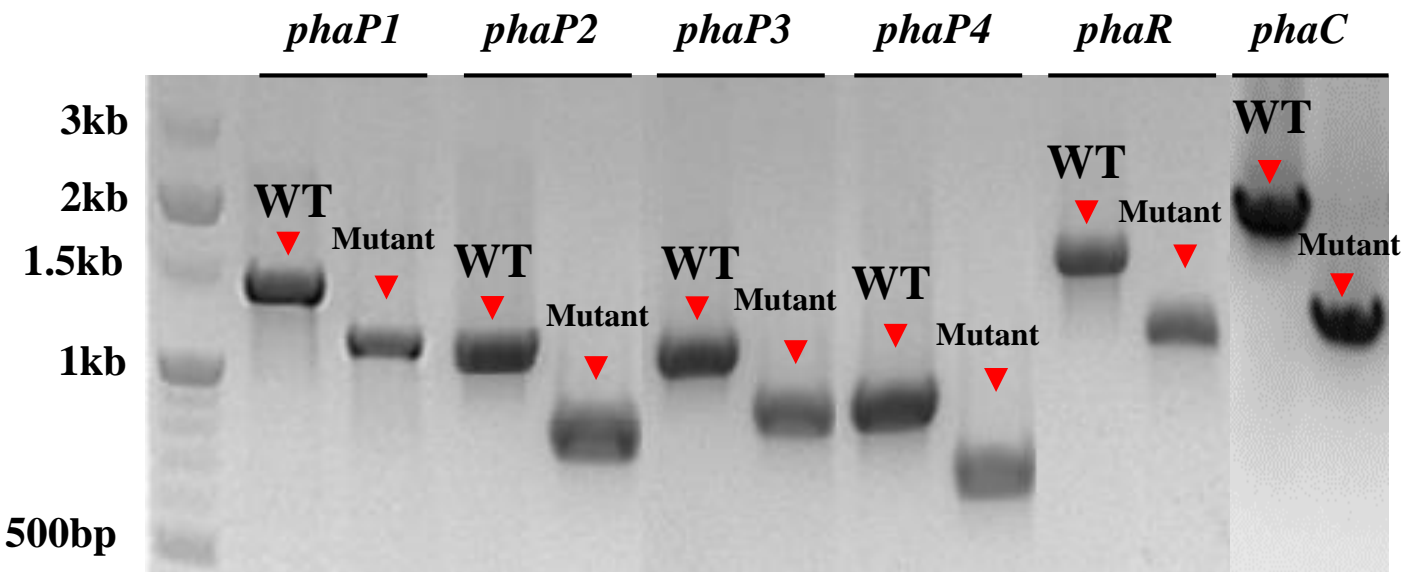
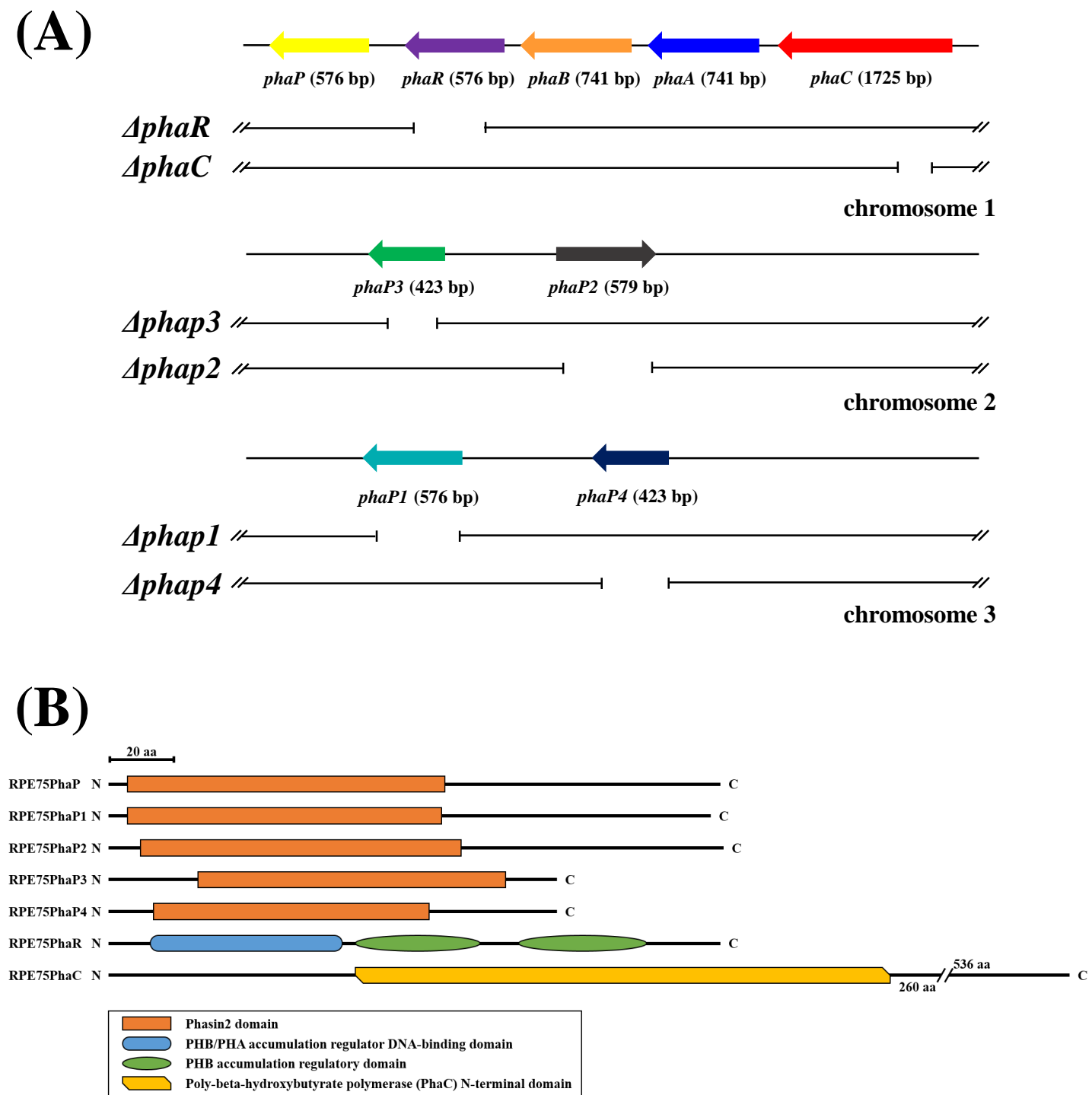


# Fig. S1



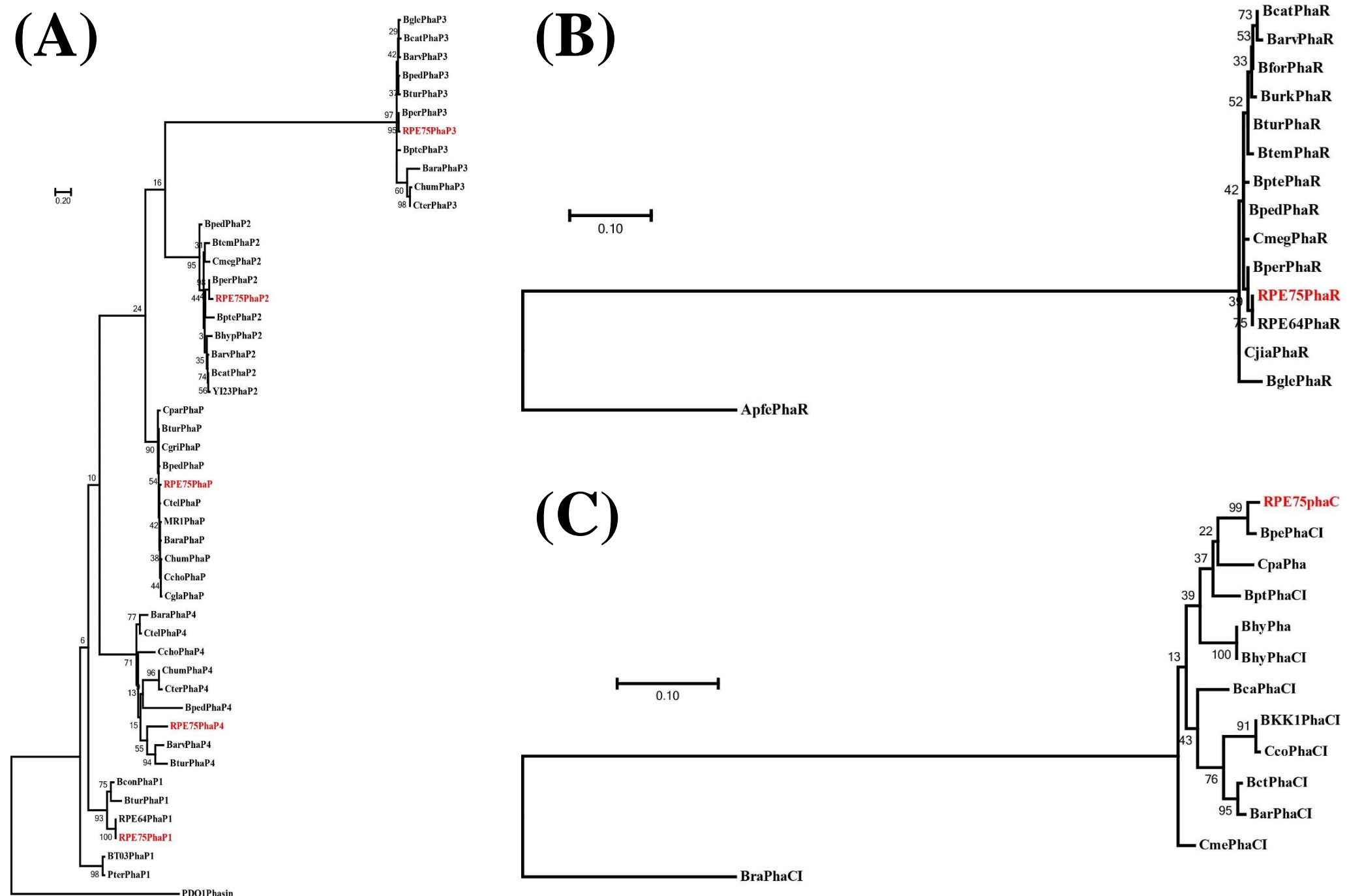
**Fig. S1.** Mutant strains are confirmed by diagnostic PCR. All of PHA-related genes are deleted from the genome of wild-type symbiont *Burkholderia*. Red arrows indicate DNA band of each wild-type and mutants.

# Fig. S2



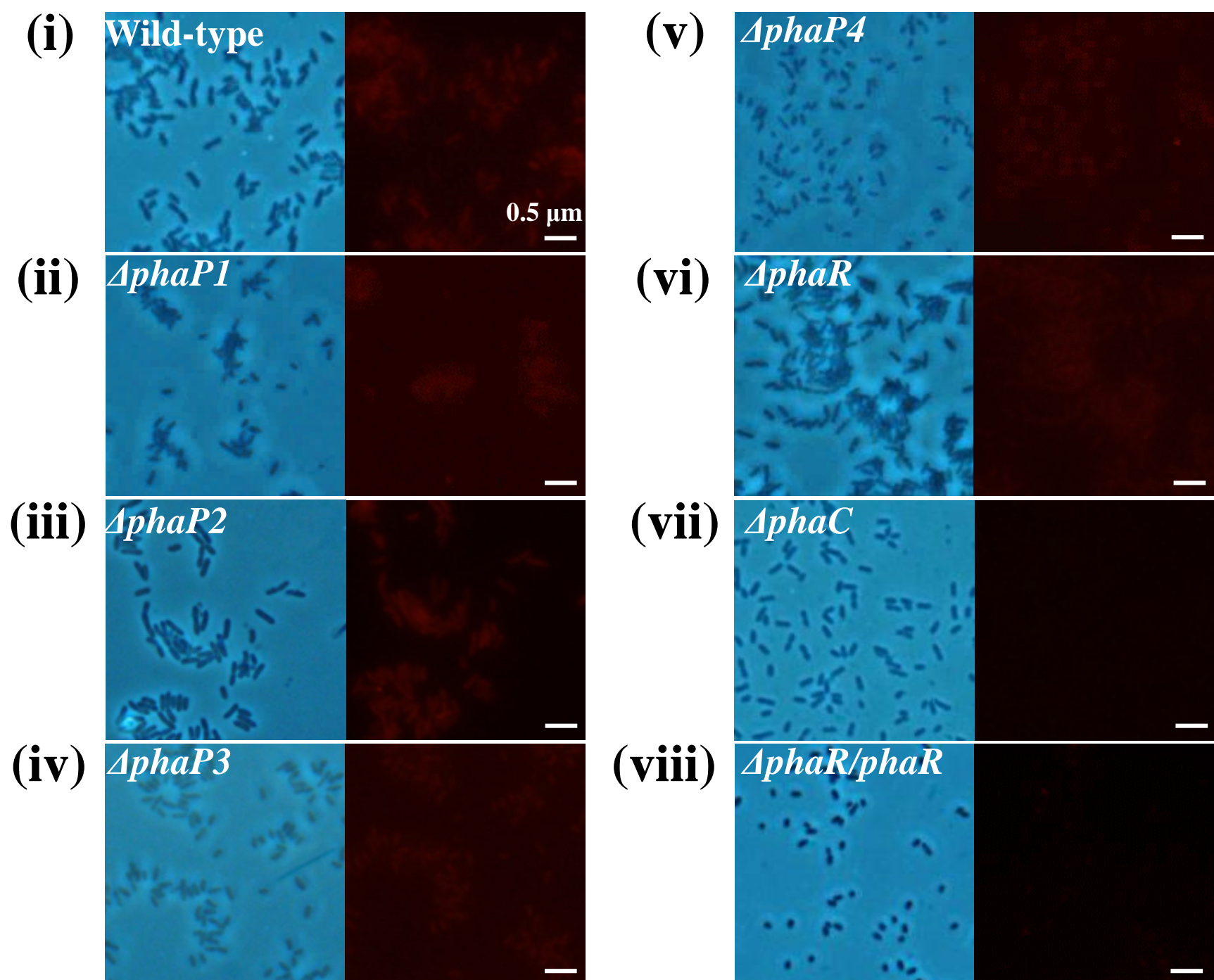
**Fig. S2.** Genomic information of PHA-related genes in *Burkholderia* RPE75. (A) Gene loci of PHA-related genes in *Burkholderia* RPE75. (B) Domain analysis of PHA-related genes. All PhaP family proteins have Phasin2 domain, PhaR has one DNA-binding domain with two PHB accumulation regulatory domain, and PhaC has PHB polymerase domain.

# Fig. S3



**Fig. S3.** Phylogenetic analysis of Phasin family proteins identified from *Burkholderia* sp. RPE75 and its orthologs. The amino acid sequences of Phasin family proteins were obtained from GenBank (<https://www.ncbi.nlm.nih.gov/>) and the phylogenetic analysis was performed by Clustal X2 and MEGA7 programs: (A) PhaP family proteins, (B) PhaR proteins, and (C) PhaC proteins.

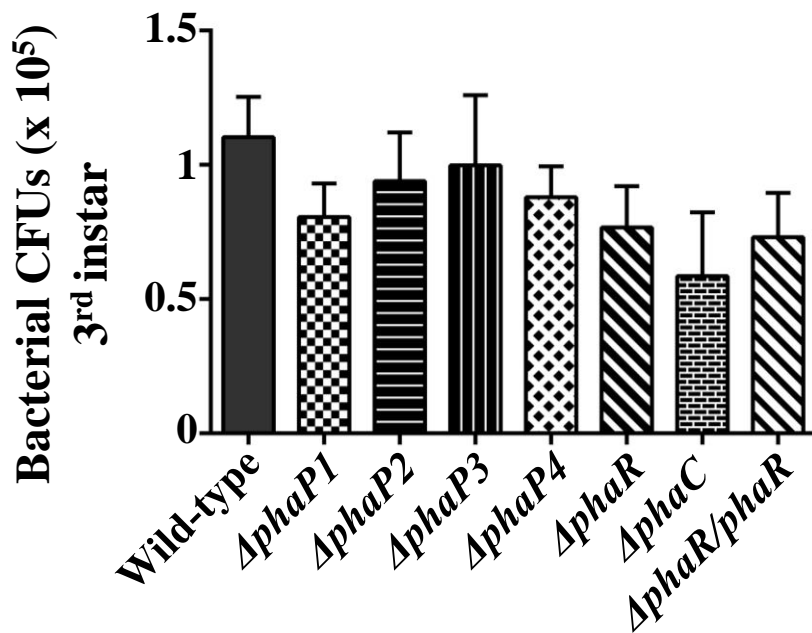
# Fig. S4



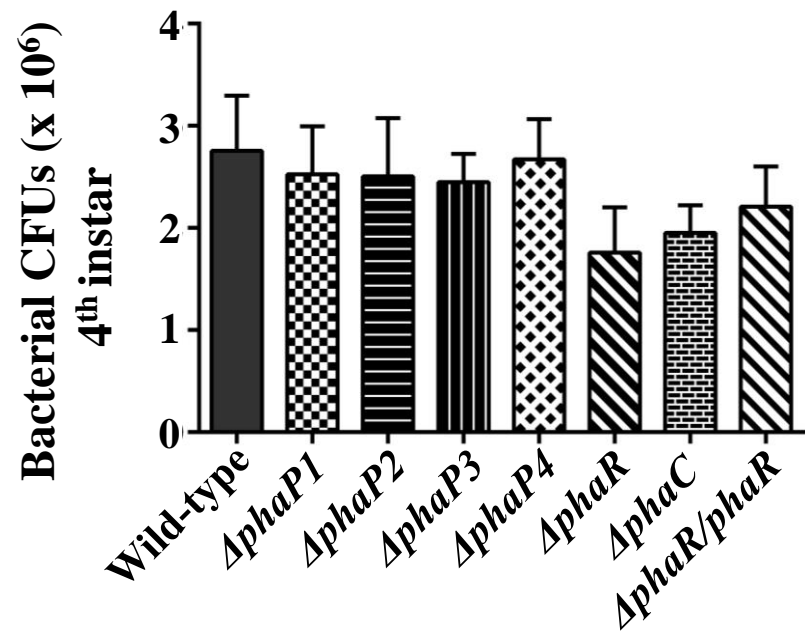
**Fig. S4.** *In vitro* PHA production by wild-type and PHA-related gene-depleted mutants of the symbiont *Burkholderia*. (Fig. S3-i-viii) Images of PHA-derived fluorescence intensities under the fluorescence microscope. Phase-contrast images (left) and fluorescent images (right) of *Burkholderia* cells cultured in YG medium are stained with Nile blue A: (i) Wild-type, (ii)  $\Delta phaP1$ , (iii)  $\Delta phaP2$ , (iv)  $\Delta phaP3$ , (v)  $\Delta phaP4$ , (vi)  $\Delta phaR$ , (vii)  $\Delta phaC$ , and (viii)  $\Delta phaR/phaR$  complemented *Burkholderia* (Scale bars, 0.5  $\mu\text{m}$ ).

# Fig. S5

(A)



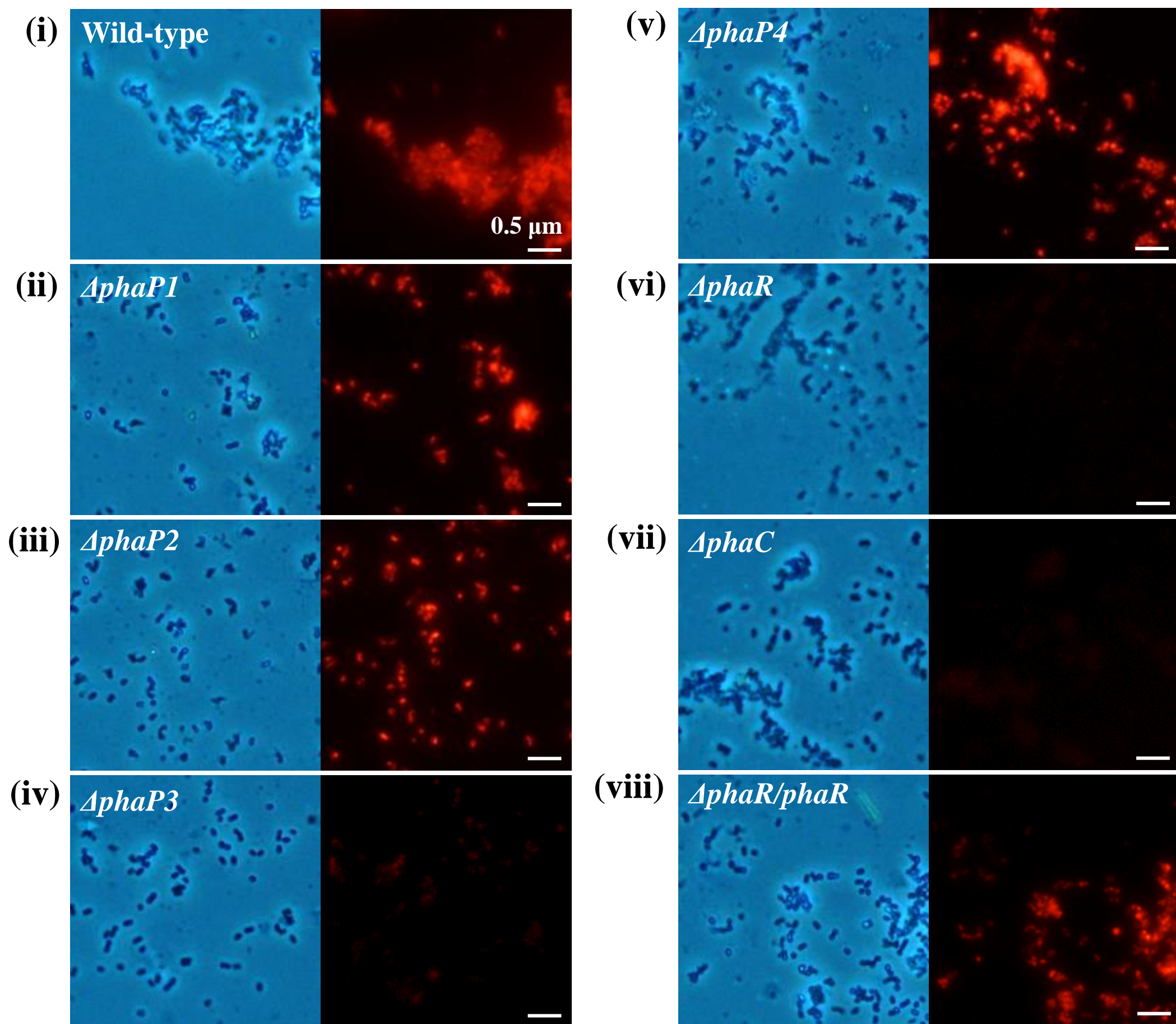
(B)



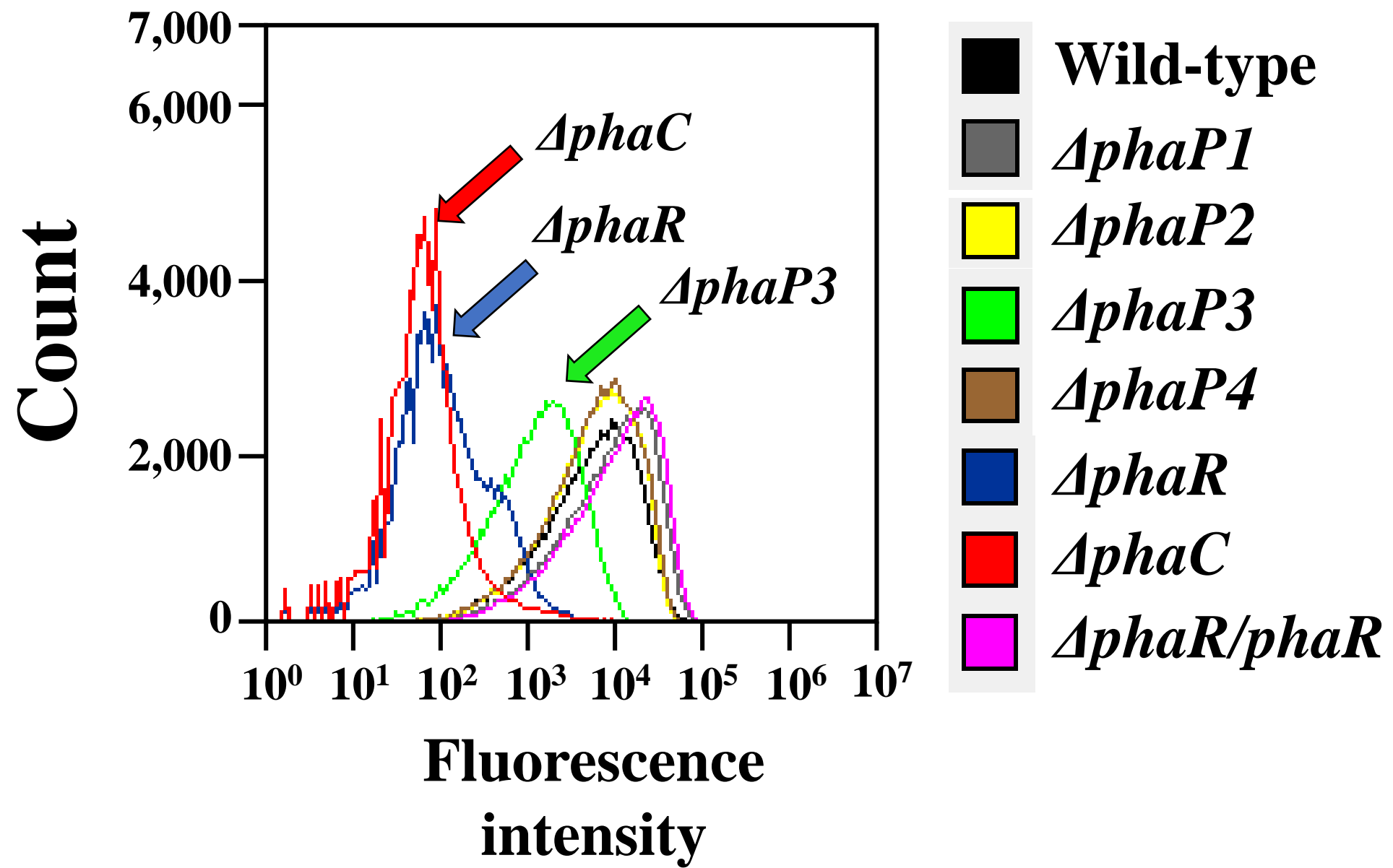
**Fig. S5.** Bacterial titers of wild-type and mutant *Burkholderia* symbionts colonized in the M4 region of the third instar (A) and fourth instar nymph (B).

# Fig. S6

(A)



(B)



**Fig. S6.** *In vivo* PHA production by wild-type and PHA-related genes-depleted mutants of the symbiont *Burkholderia* colonized in the midgut of adult female host insects. (A) Images of PHA-derived fluorescence intensities under the fluorescence microscope. Phase-contrast images (left) and fluorescent images (right) of *Burkholderia* cells: (A-i) Wild-type, (A-ii)  $\Delta phaP1$ , (A-iii)  $\Delta phaP2$ , (A-iv)  $\Delta phaP3$ , (A-v)  $\Delta phaP4$ , (A-vi)  $\Delta phaR$  and (A-vii)  $\Delta phaC$  and (A-viii)  $\Delta phaR/phaR$  complemented *Burkholderia*. (B) Flow cytometric histograms of PHA-derived fluorescence from *Burkholderia* cells. The color and name of lines are shown on the left. The shifted lines are indicated using arrows (green:  $\Delta phaP3$ , blue:  $\Delta phaR$  and red:  $\Delta phaC$ )