

Table S1 Primers used in this study

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| Ppuc-sacB_FW1 | 5'-CTGGCGGCCAATAAGTCGCACCC |
| Ppuc-sacB_RV1 | 5'-CTTTTTGATGTTTCATGTTTCAGATCGTCAGTCACTGTGTC |
| Ppuc-sacB_FW2 | 5'-GACTGACGATCTGAACATGAACATCAAAAAGTTTGCAAAAC |
| Ppuc-sacB_RV2 | 5'-TTATTTGTAACTGTTAATTGTCC |
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| appA_up_F | 5'-CTGCAGGTCGACTCTAGAGGATCCCCGCCGCCGGCAACGGGTC |
| appA_up_R | 5'-GAAAAAACAGGCGGTCAGGCGCTGCGGTCGTGTTGCATCCTTCGCCCC |
| appA_down_F | 5'-CGCAGCGCCTGACCGCCTGTTTTTTTCGTC |
| appA_down_R | 5'-GCCAGTGAATTCGAGCTCGGTACCCCATGCGGCAGCGCCTCGAGCCAGAC |
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| BT-appA-F | 5'-CGATGCAACACGACCTCGAGGCGGACG |
| TRG-appA-F | 5'-GGCGGCATGCAACACGACCTCGAGGCGGACG |
| appA-R | 5'-TCAGGCGCTGCGGCGGCGGTCCTGGC |
| BT-ppaA-F | 5'-CGATGCACGATGGCTTGCAGAGAGACAG |
| TRG-ppaA-F | 5'-GGCGGCATGCACGATGGCTTGCAGAGAGACAG |

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| ppaA-R | 5'-TCAAGCGCGGCCCGTCCGGGTCGCC |
| BT-ppsR-F | 5'-CGATGCTGGCCGGCGGGAGCCTCCCGT |
| TRG-ppsR-F | 5'-GGCGGCATGCTGGCCGGCGGGAGCCTCCCGT |
| ppsR-R | 5'-TCACTCGTCCTTGTTTCAGGAGGCCG |
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| MBP-mod-F | 5'- GATCCTTCACATGTCACATCATCATCATCACAGCAGCGGCATGGGTAAAATCGAAGAAGGTAAA |
| MBP-mod-R | 5'-GAATTCGGATCCGCGCCATGGACTGGAAGTACAGGTTTTTCGGGC |
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| Rsph-ppaA-F | 5'-CCCGAAAACCTGTACTTCCAGTCCATGCACGATGGCTTGCAGAGAGACAG |
| Rsph-ppaA-R | 5'-CTCGAATTCGGATCCGCGCCATTCAAGCGCGGCCCGTCCGGGTCG |
| Rcen-aerR-F | 5'-CCCGAAAACCTGTACTTCCAGTCCCTTGTCGCAATCCTCGCTGACTG |
| Rcen-aerR-FL_F | 5'-CCCGAAAACCTGTACTTCCAGTCCATGAACGACTCCGTCGAATGGG |
| Rcen-aerR-R | 5'-CTCGAATTCGGATCCGCGCCATTCAGCAGCCCGCAGGCATCAGGGC |
| Rpal-ppaA-F | 5'-CCCGAAAACCTGTACTTCCAGTCCATGACGGACTGGGACGACCCTCCG |
| Rpal-ppaA-R | 5'-CTCGAATTCGGATCCGCGCCATTCAGCTCTTGTTCCGCGCGGCGTG |

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| Rgel-aerR-F | 5'-CCCGAAAACCTGTACTTCCAGTCCATGGTGAGTCCGGCTGCCTGCGCC |
| Rgel-aerR-R | 5'-CTCGAATTCGGATCCGCGCCATTCATCGCCGTCCCGCTTTCGCTGC |
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| QC-PpaA- H146A-F | 5'-CTGCCGCCCGGCGAGCAGGCCACTCTGGGAGCCATGGTGGCGG |
| QC-PpaA- H146A-R | 5'-CCGCCACCATGGCTCCCAGAGTGGCCTGCTCGCCGGGCGGCAG |
| QC-PpaA- G149E-F | 5'-GCGAGCAGCACACTCTGGAAGCCATGGTGGCGGTGG |
| QC-PpaA- G149E-R | 5'-CCACCGCCACCATGGCTTCCAGAGTGTGCTGCTCGC |
| QC-PpaA- L248Stop-F | 5'-CGAACGACATTGAGGCGGCGTGACAGGCCTGCGGGCTGGGCGG |
| QC-PpaA- L248Stop-R | 5'-CCGCCAGCCCGCAGGCCTGTCACGCCGCCTCAATGTCGTTTCG |
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Table S2 Strains used in this study

| Name | Description | Source |
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| Rhodobacter sphaeroides HR | Wildtype strain | Gift from Dr. F. Robert Tabita (The Ohio State University) |
| Rhodobacter sphaeroides appA | Strain HR with a genomic deletion of appA | This study |
| E. coli BL21(DE3) | E. coli strain for production of proteins | |
| E. coli DH5 | E.coli strain used for cloning purposes | |
| E. coli XL1 Blue MRF' | E. coli strain used for two- hybrid screen | Agilent |
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| pET-MBP | Plasmid pET28b(+) with His6-MBP-TEV construct | This study |
| pET-MBP-ppaA | Plasmid pET-MBP with ppaA from Rhodobacter sphaeroides | This study |
| pET-MBP-ppaA-H146A | Plasmid pET-MBP-ppaA with a H146A point mutation | This study |

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| pET-MBP-ppaA-L248Stop | Plasmid pET-MBP-ppaA with L248 mutated to a stop codon | This study |
| pET-MBP-ppaA-G149E | Plasmid pET-MBP-ppaA with a G149E mutation | This study |
| pET-MBP-Rpal-ppaA | Plasmid pET-MBP with ppaA from <i>Rhodopseudomonas palustris</i> | This study |
| pET-MBP-Rcen-aerR | Plasmid pET-MBP with aerR from <i>Rhodospirillum centenum</i> | This study |
| pET-MBP-Rcen-aerR-FL | Similar to pET-MBP-Rcen-aerR, with adjusted start codon (an in-frame ATG 174 bp 5' of annotated start codon) | This study |
| pET-MBP-Mex-ppaA | Plasmid pET-MBP with ppaA from <i>Methylobacterium extorquens</i> | This study |
| pET-MBP-JaCCS1-ppaA | Plasmid pET-MBP with ppaA from <i>Jannaschia</i> sp. | This study |

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| pET-MBP-Rgel-aerR | Plasmid pET-MBP with aerR from <i>Rubrivivax gelatinosus</i> | This study |
| pET-MBP-NAP1-ppaA | Plasmid pET-MBP with ppaA from <i>Erythrobacter</i> sp. NAP1 | This study |
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| pBT | Bait plasmid of the BacterioMatch II bacterial-two-hybrid screen | Agilent |
| pTRG | Target plasmid of the BacterioMatch II bacterial-two-hybrid screen | Agilent |
| pBT-LGF2 | Control bait plasmid | Agilent |
| pTRG-Gal11p | Control target plasmid | Agilent |
| pBT-ppaA | Bait plasmid with ppaA | This study |
| pBT-ppsR | Bait plasmid with ppsR | This study |
| pBT-appA | Bait plasmid with appA | This study |
| pTRG-ppaA | Target plasmid with ppaA | This study |
| pTRG-ppsR | Target plasmid with ppsR | This study |
| pTRG-appA | Target plasmid with appA | This study |
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| pAJV1 | Suicide plasmid | This study |
| pAJV1-appA | Suicide plasmid with 500 bp flanking regions of appA | This study |
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| pSRKkm | Broad host range expression plasmid | Khan et al., 2008 |
| pSRK-ppaA | pSRKkm with wildtype ppaA | This study |
| pSRK-ppaA-H146A | pSRKkm with ppaA-H146A | This study |
| pSRK-ppaA-G149E | pSRKkm with ppaA-G149E | This study |