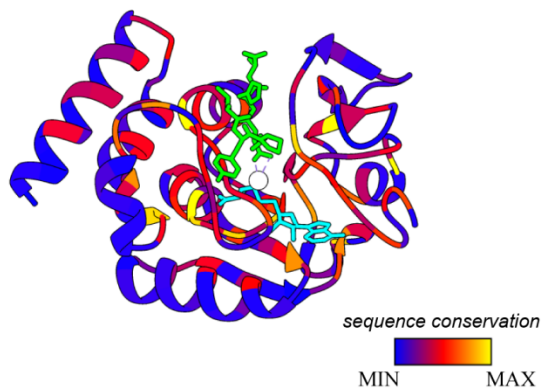


Supporting Information

SI Table 1

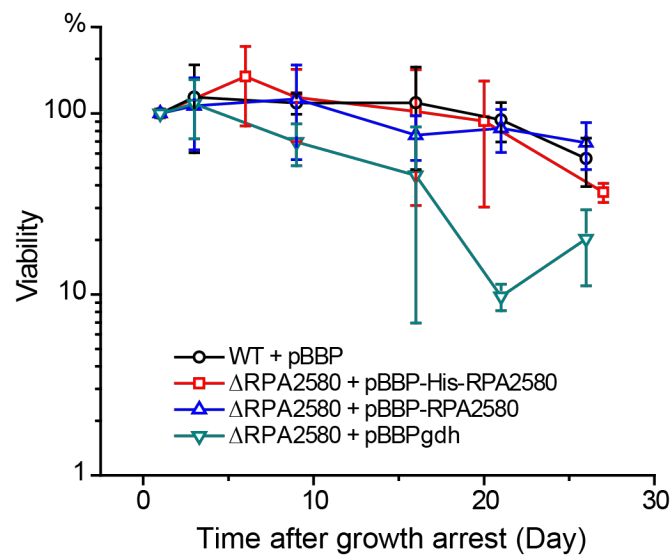
Bacterial strains used in this study

Strain number	Name	Description
M006	CGA009	The wild type <i>R. palustris</i> strain used for this study
M039	$\Delta RPA0376$	CGA009 strain deleted of <i>rpa0376</i>
M041	$\Delta RPA2580$	CGA009 strain deleted of <i>rpa2580</i>
M043	$\Delta RPA2838$	CGA009 strain deleted of <i>rpa2838</i>
M045	$\Delta RPA2838$ - <i>RPA2580</i>	CGA009 strain deleted of <i>rpa2838</i> and <i>rpa2580</i>
M046	$\Delta RPA20376$ - <i>RPA2580</i>	CGA009 strain deleted of <i>rpa0376</i> and <i>rpa2580</i>
M047	$\Delta RPA0376$ - <i>RPA2838</i>	CGA009 strain deleted of <i>rpa0376</i> and <i>rpa2838</i>
M053	ΔTRI - <i>PIMT</i>	CGA009 strain deleted of <i>rpa0376</i> , <i>rpa2580</i> and <i>rpa2838</i>
M079	<i>pBBP-His-RPA2580</i>	A construct of His-tagged RPA2580 was cloned into pBBPgdh plasmid with the native ribosomal binding site of RPA2580.
M080	$\Delta RPA2580$:: <i>pBBP-His-RPA2580</i>	The strain $\Delta RPA2580$ harboring the plasmid <i>pBBP-His-RPA2580</i>



SI Figure 1.

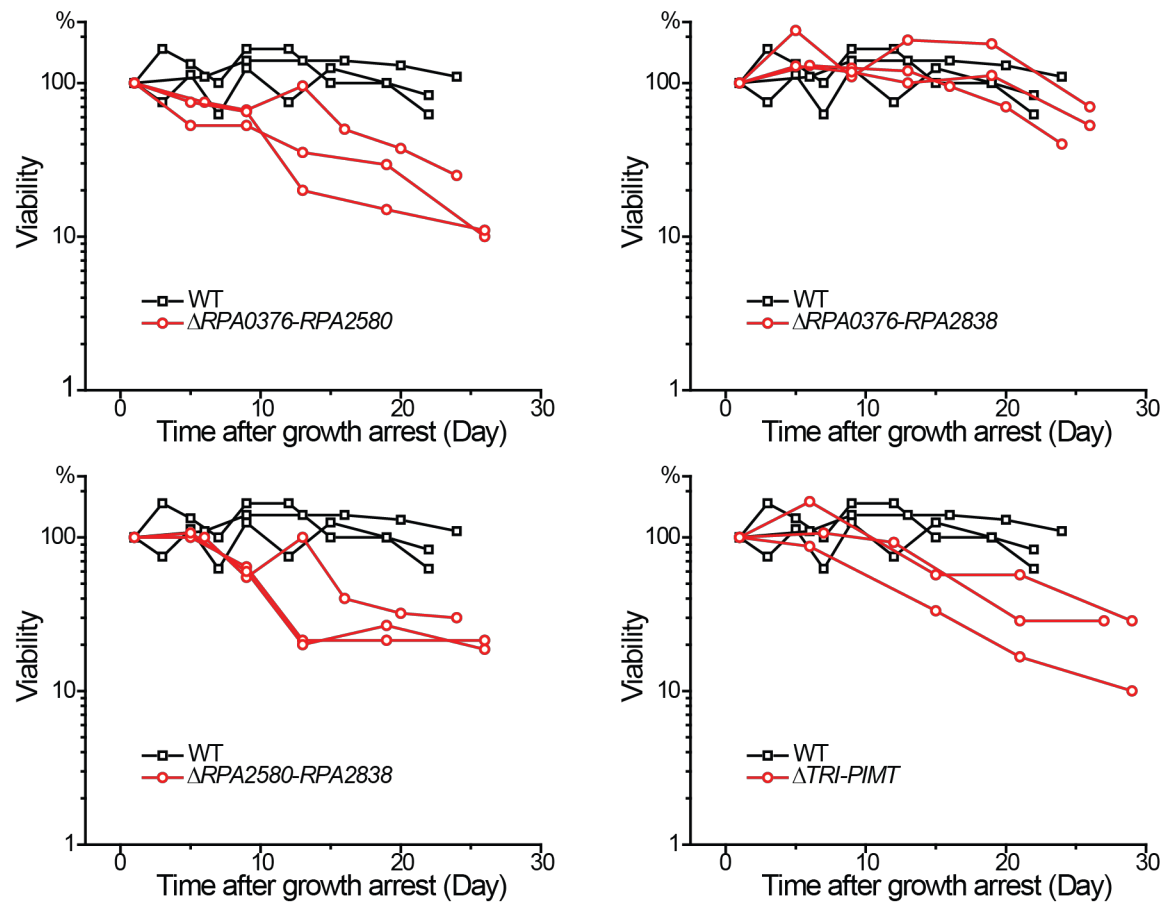
A structural model of RPA0376 is colored based on its amino acid conservation with known PIMT sequences. The SAH is shown in cyan and the peptide VYP-*iso*D-HA is shown in green. The white sphere represents the location of the methyl group that is transferred.



SI Figure 2.

The compromised longevity of a *rpa2580* deletion mutant is complemented by expressing His-tagged RPA2580 *in trans*.

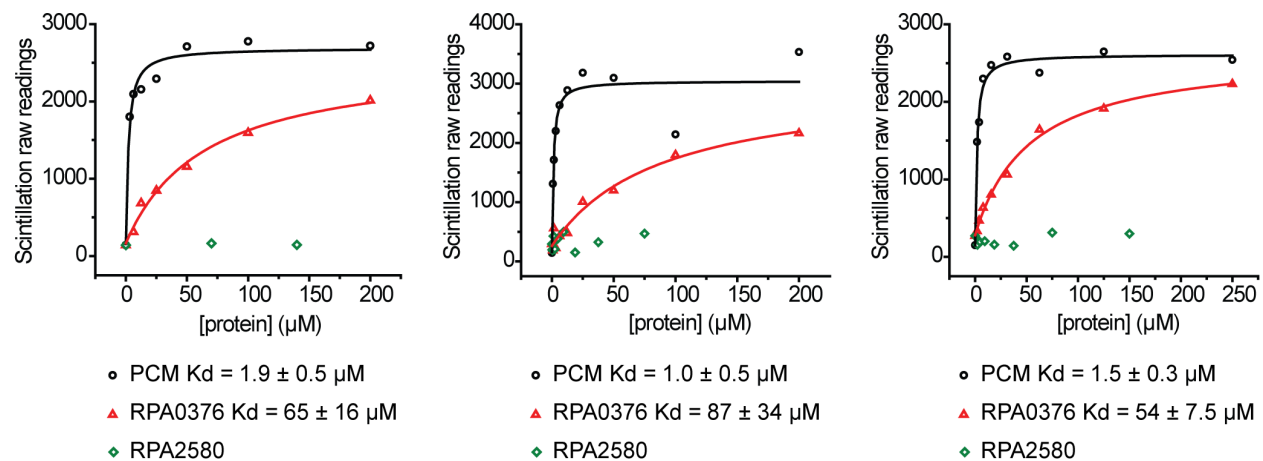
Functional divergence of bacterial PIMTs



SI Figure 3.

Survival of growth-arrested cells of different *R. palustris* mutants. The data for the wild-type strain are from our previous study. A *rpa0376* and *rpa2838* double deletion mutant had a wild type longevity phenotype.

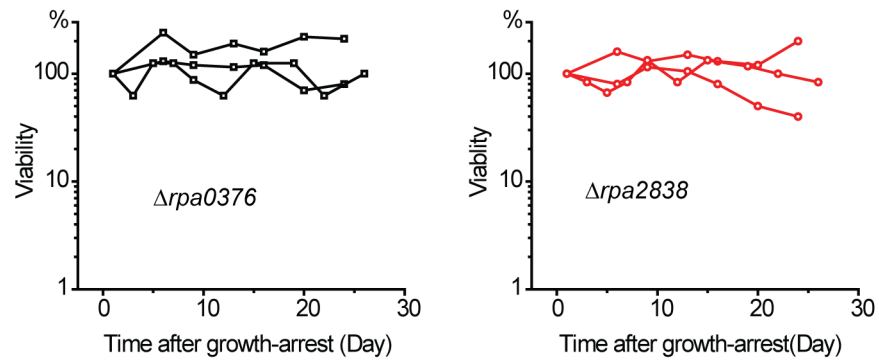
Functional divergence of bacterial PIMTs



SI Figure 4.

SAM binding of *R. palustris* and *E. coli* PIMTs. Serial dilutions of tested proteins were incubated with $0.5 \mu\text{M}$ ^{14}C -SAM at 30°C for one h and then the bound SAM was measured. The data were fitted to a one-to-one binding model and the K_d s were calculated for three different sets of serial dilutions.

Functional divergence of bacterial PIMTs



SI Figure 5.

Survival of growth-arrested cells of different *R. palustris* mutants. The strain deleted of either *rpa0376* or *rpa2838* had a wild type longevity phenotype.