

**S9 Table. Rifampicin resistance assay.**

<b>MutY Expressed</b>	<b>Median (ci.low<sup>a</sup>, ci.high<sup>a</sup>)</b>	<b>Mutation Frequency<sup>b</sup> (per 10<sup>8</sup> cells)</b>	<b>Fold Change of EcMutY (ci.low<sup>a</sup>, ci.high<sup>a</sup>)</b>	<b>n</b>
<i>null</i>	101 (81, 145)	20.26	8.78 (6.44, 13.3)	90
<i>E. coli</i> MutY	12 (9, 14)	6.70	1.00 (NA, NA)	79
<i>Marinosulfonomonus</i> MutY	7 (4, 10)	4.13	0.57 (0.27, 0.91)	30
<i>Marinosulfonomonus</i> MutY (catalysis-)	70 (51, 97)	30.77	6.09 (4.32, 9.30)	29
<i>Marinosulfonomonus</i> MutY (recognition-)	74 (59, 90)	11.53	6.39 (4.69, 8.80)	40
<i>Rhodobacteraceae</i> MutY	14 (8, 22)	3.48	1.22 (0.71, 2.00)	30
<i>Rhodobacteraceae</i> MutY (catalysis-)	61 (50, 80)	41.37	5.26 (4.00, 8.00)	38
<i>Rhodobacteraceae</i> MutY (recognition-)	70 (50, 82)	37.65	6.09 (4.12, 8.75)	30
<i>Thiotrichaceae</i> MutY	54 (42, 63)	14.77	4.70 (3.23, 6.44)	47
<i>Thiotrichaceae</i> MutY (catalysis-)	98 (50, 157)	28.89	8.48 (4.46, 14.28)	48
<i>Thiotrichaceae</i> MutY (recognition-)	72 (48, 183)	10.75	6.26 (3.77, 18.00)	20

<sup>a</sup> Confidence intervals (95%) determined by a bootstrap method, see Materials and Methods for details.

<sup>b</sup> Mutation frequency reported as median number of resistant colonies per 10<sup>8</sup> viable colonies. Fold change was calculated by dividing Rif<sup>R</sup> frequency by the frequency measured for cultures expressing *Ec* MutY.