

Supplementary Table: Comparison between termination efficiencies and their computational predicated values. Termination efficiencies are reported in terms of the degree of gene silencing in the presence of ligand. Computational predictions are derived from the proportion of structures in the terminator set of the energy landscape. (RNAP = RNA polymerase)

<u>Riboswitch Name (reference)</u>	<u>Ligand</u>	<u>Termination efficiency in presence of ligand</u>	<u>Experimental Conditions used in Assay</u>	<u>Computational Prediction</u>
<i>tenA, B. subtilis</i> ¹	TPP	85%	<i>In vitro, B. subtilis</i> RNAP	85%
118 mutant	TPP	99%	<i>In vitro, B. subtilis</i> RNAP	~100%
30 mutant	TPP	27%	<i>In vitro, B. subtilis</i> RNAP	39.8%
80 mutant	TPP	64%	<i>In vitro, B. subtilis</i> RNAP	87%
97 mutant	TPP	89%	<i>In vitro, B. subtilis</i> RNAP	8.1%
<i>ribD, B. subtilis</i> ¹	FMN	55%	<i>In vitro, E. coli, B. subtilis</i> RNAP	85%
<i>ypaA, B. subtilis</i> ^{2,3}	FMN		<i>In vitro T7</i> RNAP	77%
<i>gcvT, B. subtilis</i> ⁴	Glycine	~70%	<i>In vitro, E. coli</i> RNAP	~100%
<i>VCI-II, V. cholera</i> ⁴	Glycine		<i>In vitro, E. coli</i> RNAP	51%
<i>btuB, E. coli</i> ⁵	Coenz. B ₁₂	88.7:1	<i>In vivo, E. Coli, β-Gal reporter</i>	92.3%
<i>thiM, E. coli</i> ⁶	TPP	18:1	<i>In vivo, E. Coli, β-Gal reporter</i>	35.1%

Reference List

1. Mironov, A. S., Gusarov, I., Rafikov, R., Lopez, L. E., Shatalin, K., Krneva, R. A., Perumov, D. A., & Nudler, E. (2002). Sensing small molecules by nascent RNA: a mechanism to control transcription in bacteria. *Cell* **111**, 747-756.

Ref Type: Journal

2. Winkler, W. C., Cohen-Chalamish, S., & Breaker, R. R. (2002). An mRNA structure that controls gene expression by binding FMN. *Proc. Natl. Acad. Sci. U. S. A* **99**, 15908-15913.

Ref Type: Journal

3. Lee, J. M., Zhang, S., Saha, S., Santa, A. S., Jiang, C., & Perkins, J. (2001). RNA expression analysis using an antisense *Bacillus subtilis* genome array. *J. Bacteriol.* **183**, 7371-7380.

Ref Type: Journal

4. Mandal, M., Lee, M., Barrick, J. E., Weinberg, Z., Emilsson, G. M., Ruzzo, W. L., & Breaker, R. R. (2004). A glycine-dependent riboswitch that uses cooperative binding to control gene expression. *Science* **306**, 275-279.

Ref Type: Journal

5. Nahvi, A., Sudarsan, N., Ebert, M. S., Zou, X., Brown, K. L., & Breaker, R. R. (2002). Genetic control by a metabolite binding mRNA. *Chem. Biol.* **9**, 1043.

Ref Type: Journal

6. Winkler, W., Nahvi, A., & Breaker, R. R. (2002). Thiamine derivatives bind messenger RNAs directly to regulate bacterial gene expression. *Nature* **419**, 952-956.

Ref Type: Journal