

S1 Table. Correlation between conservation, efficiency and robustness scores, for *E. coli* and *S. cerevisiae*.

| Organism | | Correlation | Genes | coefficient | p-value |
|----------------------|-------------|---------------------------|--------------|--------------------|----------------|
| <i>E. coli</i> | Genome wide | efficiency - robustness | 4259 | -0.0622 | 4.81e-05 |
| | | efficiency – conservation | 2944 | 0.1231 | 2.03e-11 |
| | | robustness - conservation | | 0.0034 | 0.054 |
| | model | efficiency - robustness | 1304 | -0.0245 | 0.3759 |
| | | efficiency – conservation | 1115 | 0.1478 | 7.17e-7 |
| | | robustness - conservation | | 0.0611 | 0.0413 |
| <i>S. cerevisiae</i> | Genome wide | efficiency - robustness | 6043 | 0.1011 | 3.37e-15 |
| | | efficiency – conservation | 2962 | 0.5441 | 6.75e-228 |
| | | robustness - conservation | | -0.0824 | 7.14e-6 |
| | model | efficiency - robustness | 874 | 0.2588 | 7.63e-15 |
| | | efficiency – conservation | 475 | 0.7025 | 0 |
| | | robustness - conservation | | 0.2835 | 3.15e-10 |