

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Prediction accuracies in four canonical bacterial datasets of Figure 2.

File Name: Supplementary Data 2

Description: Prediction accuracies in *Entacmaea quadricolor* datasets of Figure 3a.

File Name: Supplementary Data 3

Description: Epistatic error in *Entacmaea quadricolor* datasets of Figure 3b.

File Name: Supplementary Data 4

Description: Prediction accuracies in *Entacmaea quadricolor* datasets of Figure 3c.

File Name: Supplementary Data 5

Description: Prediction accuracies in avGFP and GB1 datasets of Figure 4.