

Supporting information.

Fig. S1 The kinetics of the FolC-catalyzed reaction were measured as a function of the aminopterin concentration (0 to 0.5 mM) at an L-glutamate concentration of 5 mM in the presence of GlnD (squares) or its absence (circles).

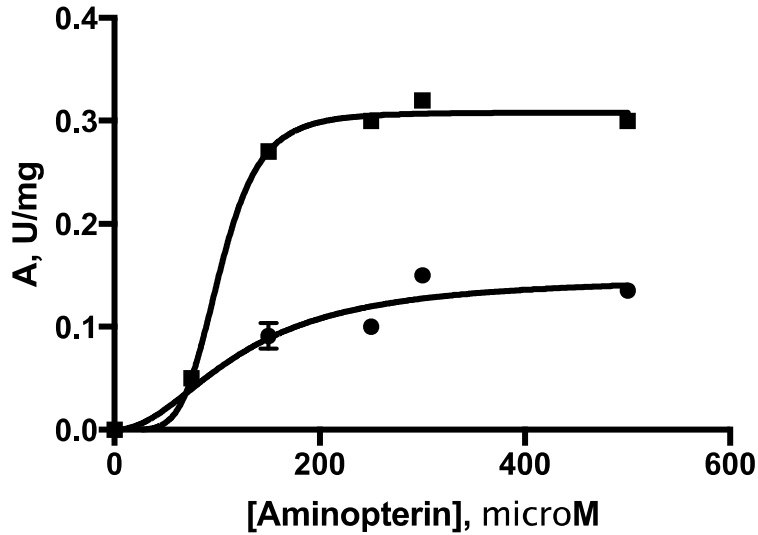


Fig. S2 The effect of L-glutamine (circles) and addition of 1.5 mM α -KG (triangles) on GlnD dependent activation of FolC.

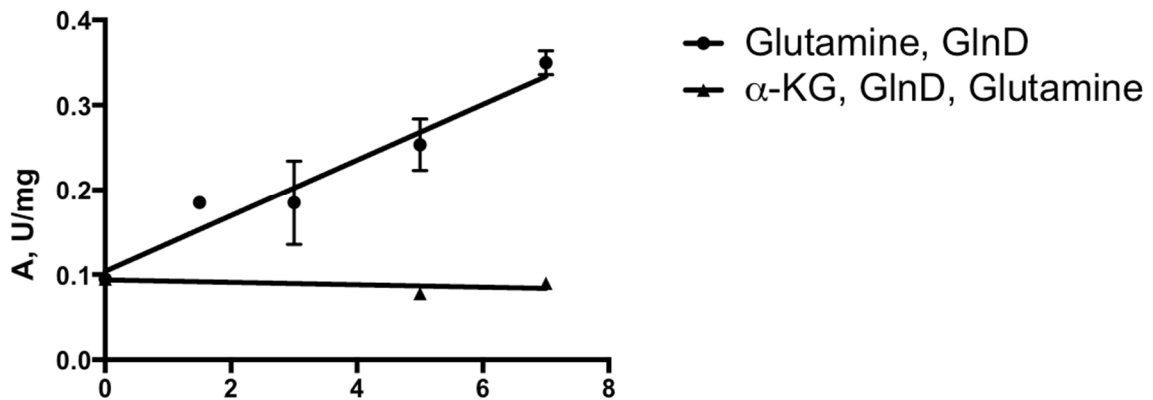


Table S1. The interacting residues in the model (FolC-Ugd, FolC-MnmE)

Interacting pair	FolC interface	Ugd interface	MnmE interface
FolC-Ugd	19, 21, 22, 23, 24, 25, 26, 27, 28, 172, 173, 175, 176, 334, 335, 336, 337, 358, 359, 360, 361, 362, 364, 366, 375, 377, 379, 380	157, 163, 192, 199, 203, 207, 210, 214, 217, 221, 227, 228, 231, 232, 235, 236, 237, 238, 265, 268, 269, 271, 272, 273	
FolC-MnmE	36, 171, 174, 175, 179, 181, 228, 230, 314, 315, 334, 335, 337, 339, 343, 344, 346, 347, 360, 361, 362, 370, 371		27, 44, 68, 70, 71, 75, 117, 118, 119, 120, 125, 149, 150, 157, 158, 160, 161, 176, 437

Table S2. List of gene pairs with genetic interaction scores in the rich and minimal media growth conditions.

Bioprocesses	Mutant 1	Mutant 2	GI score from rich media (Cell envelope study:(1))	GI score from minimal media (Cell envelope study: (1))
Carbon metabolism	folC	accB	-3.40167	---
	ugd	accB	-20.0000002	-20.0000001
	folC	accC	-20.0000002	---
	ugd	accC	-20.0000002	-20.0000001
	ugd	ackA	-6.68861	---
	ugd	pta	---	-20.0000001
	ugd	fadB	-3.06252	-3.42229
	ugd	folD	-4.45695	-20.0000001
	ugd	frdB	-6.93152	---
	ugd	frdC	-20.0000002	-20.0000001
	folC	frdD	-20.0000002	---
	ugd	frdD	-9.49324	---
Folate biosynthesis	folC	folM	2.39719	---
	ugd	folA	2.13185	---
	folC	pabC	3.97176	---
Glutamate Metabolism	folC	purB	2.34572	---
	ugd	glmS	---	2.92707

1. Babu, M., Diaz-Mejia, J. J., Vlasblom, J., Gagarinova, A., Phanse, S., Graham, C., Yousif, F., Ding, H., Xiong, X., Nazarians-Armavil, A., Alamgir, M., Ali, M., Pogoutse, O., Pe'er, A., Arnold, R., Michaut, M., Parkinson, J., Golshani, A., Whitfield, C., Wodak, S. J., Moreno-Hagelsieb, G., Greenblatt, J. F., and Emili, A. (2011) Genetic interaction maps in *Escherichia coli* reveal functional crosstalk among cell envelope biogenesis pathways. *PLoS Genet* 7, e1002377