

Supporting Information

**Metabolic Flux Between Unsaturated and Saturated Fatty Acids is  
Controlled by the FabA:FabB Ratio in the Fully Reconstituted Fatty  
Acid Biosynthetic Pathway of *E. coli*<sup>#</sup>**

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**Table S1: Primers for PCR.**

Gene	Primers for PCR
<i>accA</i>	Forward: 5' ATATCATATGAGTCTGAATTCCTTGA3'
	Reverse: 5' ATATGAATTCATGGGCTACTAGTTACGCGTAACCGTAGCTCA3'
<i>accC</i>	Forward: 5' ATATCATATGCTGGATAAAATTGTTAT 3'
	Reverse: 5' ATATGAATTCATGGGCTACTAGTTATTTTTCCTGAAGACCGA3'
<i>birA</i>	Forward: 5' ATATTCTAGAAATAATTTTGTTTA3'
	Reverse (for pXY33): 5' ATATACTAGTTATTTTCTGCACTACGCAGGGA3'
	Reverse (for pXY44): 5' ATATAAGCTTATGGGCTACTAGTTATTTTCTGCACTACGCAGG GA3'

**Table S2: Plasmids used in this study.**

<b>Plasmids</b>	<b>Description</b>	<b>Reference</b>
pCY216	<i>P<sub>BAD</sub></i> : BirA Origin of replication: p15a	1
pET21a- BirA	<i>P<sub>T7</sub></i> : C-terminally His-tagged BirA Origin of replication: pBR322	2
pJexpress411 -AccB	<i>P<sub>T7</sub></i> : N-terminally His-tagged AccB Origin of replication: pUC	This study
pJexpress411 -AccD	<i>P<sub>T7</sub></i> : N-terminally His-tagged AccD Origin of replication: pUC	This study
pXY30	<i>P<sub>T7</sub></i> : N-terminally His-tagged AccA Origin of replication: pBR322	This study
pXY31	<i>P<sub>T7</sub></i> : N-terminally His-tagged AccB Origin of replication: pBR322	This study
pXY42	<i>P<sub>T7</sub></i> : N-terminally His-tagged AccC Origin of replication: pBR322	This study

**References:**

- (1) Chapman-Smith, A., Turner, D. L., Cronan, J. E., Jr., Morris, T. W., and Wallace, J. C. (1994) Expression, biotinylation and purification of a biotin-domain peptide from the biotin carboxy carrier protein of *Escherichia coli* acetyl-CoA carboxylase. *Biochem. J.* 302 ( Pt 3), 881-887.
- (2) Howarth, M., Takao, K., Hayashi, Y., and Ting, A. Y. (2005) Targeting quantum dots to surface proteins in living cells with biotin ligase. *Proc. Natl. Acad. Sci. U. S. A.* 102, 7583-7588.
- (3) Davis, M. S., Solbiati, J., and Cronan, J. E., Jr. (2000) Overproduction of acetyl-CoA carboxylase activity increases the rate of fatty acid biosynthesis in *Escherichia coli*. *J. Biol. Chem.* 275, 28593-28598.

**Table S3: Calculated pI values of proteins <sup>a</sup>.**

Protein	pI
AccA	6.9
<i>Holo-AccB</i>	5.7
AccC	7.5
AccD	7.8
FabA	7.7
FabB	6.3
FabD	6.0
FabF	6.5
FabG	7.7
FabH	6.1
FabI	6.8
FabZ	8.1
<i>Holo-ACP</i>	5.4
TesA	7.4
Wax synthase	9.0

<sup>a</sup> Values were calculated from:

<http://www.scripps.edu/~cdputnam/protcalc.html>