Supplementary Table I. Primers used for amplifying the Elovl2/Elovl5 chimeric constructs and Elovl5 and Elovl2 point mutations.

Primer	Template	Direction	Sequence 5'-3'	Corresponding figure
Chimera 1:				Figure 4A
Elovl2_1-600bp	pYES2-Elovl2*	EcoR1_F	GCG*GAATTC*TTGGACAACATGTTTGGACCA*	
		600_R	GGTCTGGATGATGGTCAGTACAAACTG	
Elovl2_670-840bp	pYES2-Elovl2*	670_F	CAGATCGGATACATGATGACACTGGTT	
		Not1_R	GACT*GCGGCCGC*CGCTTCACCTCATTGCACCTTCTTG*	
Elovl5_643-711bp	pYES2-Elovl5*	643_F	CTGACCATCATCCAGACCAGCTGCGGG	
		711_R	CATCATGTATCCGATCTGGAAGTACAG	
Chimera 2:				Figure 4B
Chimera2_W-K	pYES2-Chimera1	F	AGCTGCGGGGTCATC**AA**GCCGTGCTCCTTCCCTCTCGGGTGG	
		R	CCACCCGAGAGGGAAGGAGCACGGC**TT**GATGACCCCGCAGCT	

Chimera2_S-G	pYES2-Chimera1_W-K	F	AGCTGCGGGGTCATCAAGCCGTGC**GG**CTTCCCTCTC GGGTGG
		R	CCACCCGAGAGGGAAG**CC**GCACGGCTTGATGACCC CGCAGCT
Chimera2_I-V_L-F	pYES2-Chimera1_W-K_S-G	F	CCAGCTGCGGGGTC**G**TCAAGCCGTGCGGCTTCCCT**T** TCGGGTGGCTGTACTTCC
		R	GGAAGTACAGCCACCCGAAAGGGAAGCCGCACGG CTTGA**C**GACCCCGCAGCTGG
Chimera 3:			Figure 4C
Chimera3_G-A_W-C	pYES2-Chimera2	F	CCAGACCAGCTGCG**C**GGTCGTCAAGCCGTGCGGCT TCCCTTTCGGGTG**C**CTGTACTTCCAGATCG
		R	CGATCTGGAAGTACAG**G**CACCCGAAAGGGAAGCCG CACGGCTTGACGACC**G**CGCAGCTGGTCTGG
Chimera 4:			Figure 4D
Chimera4_Y-I	pYES2-Chimera3	F	CCTTTCGGGTGCCTG**AT**CTTCCAGATCGGATAC
		R	GTATCCGATCTGGAAG**AT**CAGGCACCCGAAAGG

Chimera 5:				Figure 4E
Chimera5_C-S	pYES2-Chimera3	F	CATCCAGACCAGC**A**GCGCGGTCGTCAAGC	
		R	GCTTGACGACCGCGC**T**GCTGGTCTGGATG	
Chimera5_S-L	pYES2-Chimera5_C-S	F	GACCATCATCCAGACC**CT**CAGCGCGGTCGTCAAG	
		R	CTTGACGACCGCGCTG**AG**GGTCTGGATGATGGTC	
Set A:				
Elovl5_W231C	pYES2-Elovl5*	F	CCTTCCCTCTCGGGTG**T**CTGTACTTCCAGATCG	Figure 5A
		R	CGATCTGGAAGTACAG**A**CACCCGAGAGGGAAGG	
Elovl5_Y233I	pYES2-Elovl5*	F	CCTCTCGGGTGGCTG**AT**CTTCCAGATCGGATAC	Figure 5B
		R	GTATCCGATCTGGAAG**AT**CAGCCACCCGAGAGG	
Elovl5_S218L	pYES2-Elovl5*	F	ATCATCCAGACC**CT**CTGCGGGGTCATC	Figure 5C
		R	GATGACCCCGCAG**AG**GGTCTGGATGAT	
Elovl5_C219S	pYES2-Elovl5*	F	CATCCAGACCAGC**A**GCGGGGTCATCTGG	Figure 5D
		R	CCAGATGACCCCGC**T**GCTGGTCTGGATG	
Elovl5_G220A	pYES2-Elovl5*	F	CCAGACCAGCTGCG**C**GGTCATCTGGCCG	Figure 5E
		R	CGGCCAGATGACC**G**CGCAGCTGGTCTGG	

Set B:				
Elovl2_C231W	pYES2-Elovl2*	F	CCCCTTTGGCTG**G**CTCATCTTCCAG	Figure 6A
		R	CTGGAAGATGAG**C**CAGCCAAAGGGG	
Elovl2_C231A	pYES2-Elovl2*	F	CTTCCCCTTTGGC**GC**TCTCATCTTCCAG	Figure 6B
		R	CTGGAAGATGAGA**GC**GCCAAAGGGGAAG	
Elovl2_C231F	pYES2-Elovl2*	F	CTTCCCCTTTGGCT**TC**CTCATCTTCCAG	Figure 6C
		R	CTGGAAGATGAG**GA**AGCCAAAGGGGAAG	

*(1), restriction enzyme sites are indicated by italics, start or stop codons are underlined and point mutations are bold.

1. Gregory, M. K., R. A. Gibson, R. J. Cook-Johnson, L. G. Cleland, and M. J. James. 2011. Elongase reactions as control points in long-chain polyunsaturated fatty acid synthesis. *PLoS One* **6**: e29662.