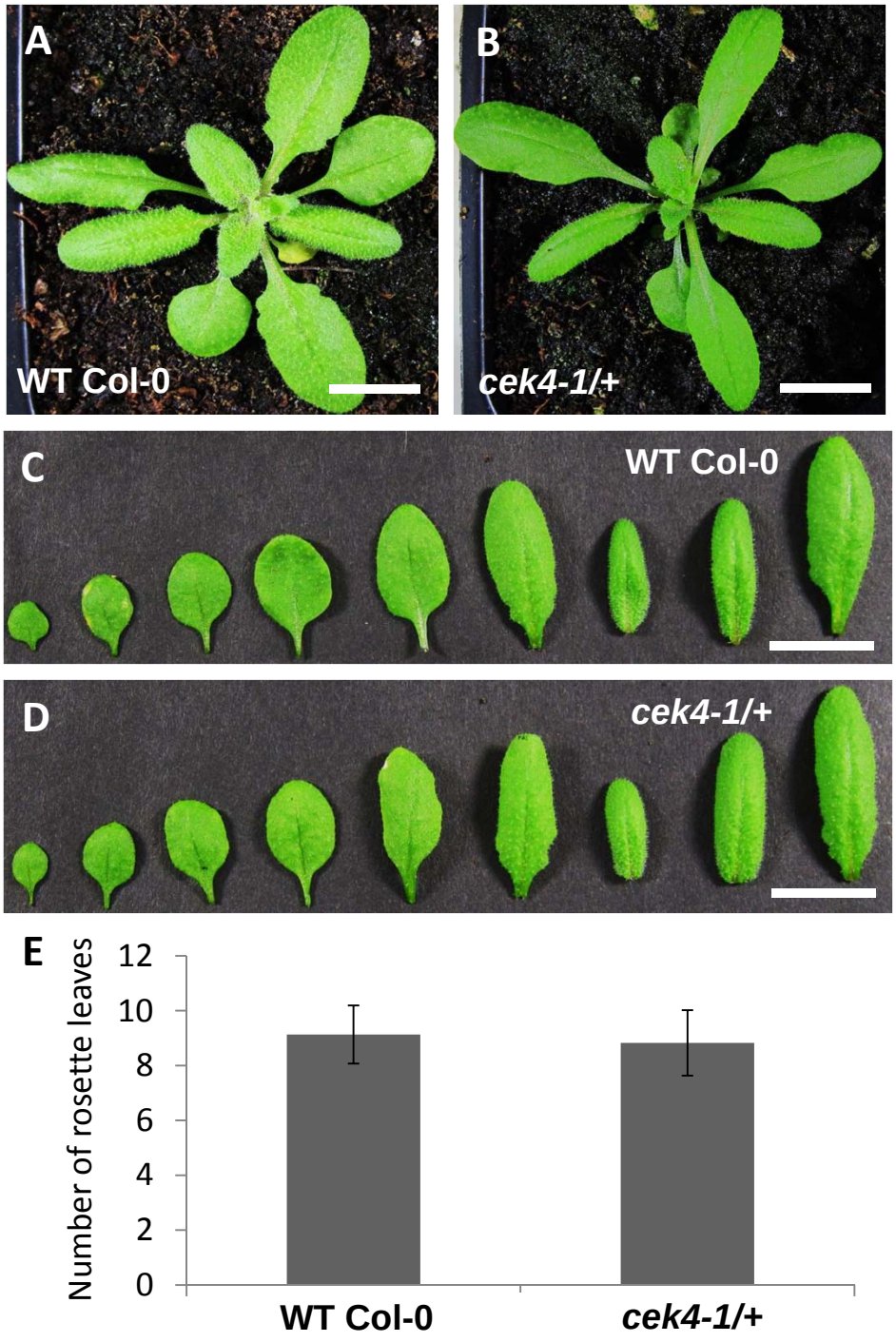
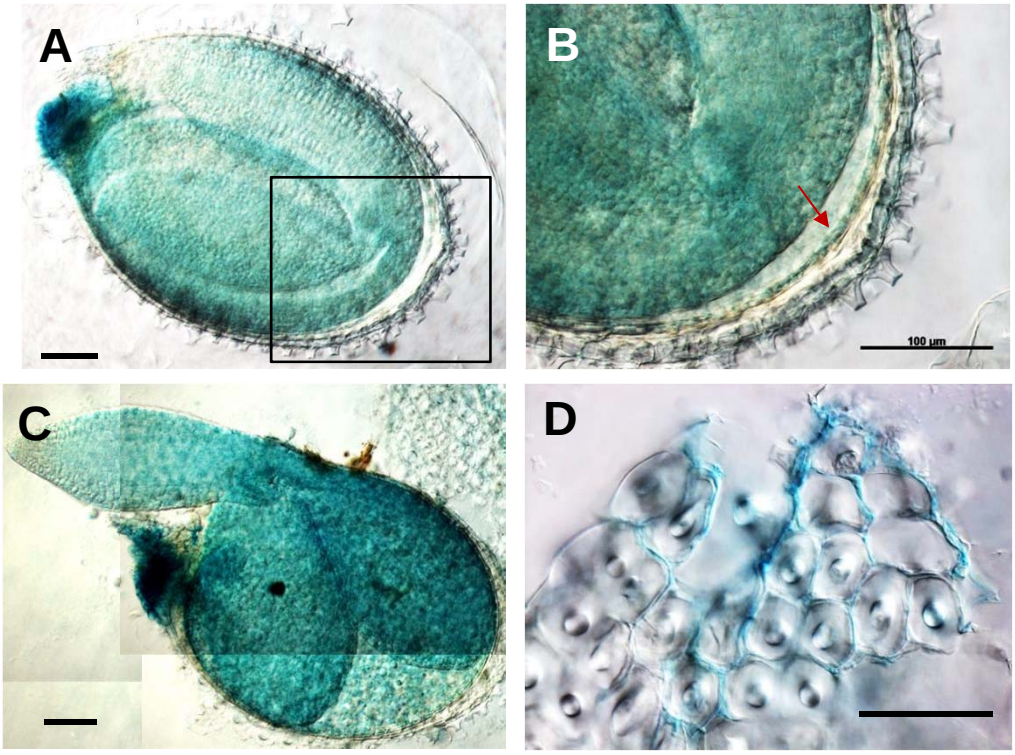
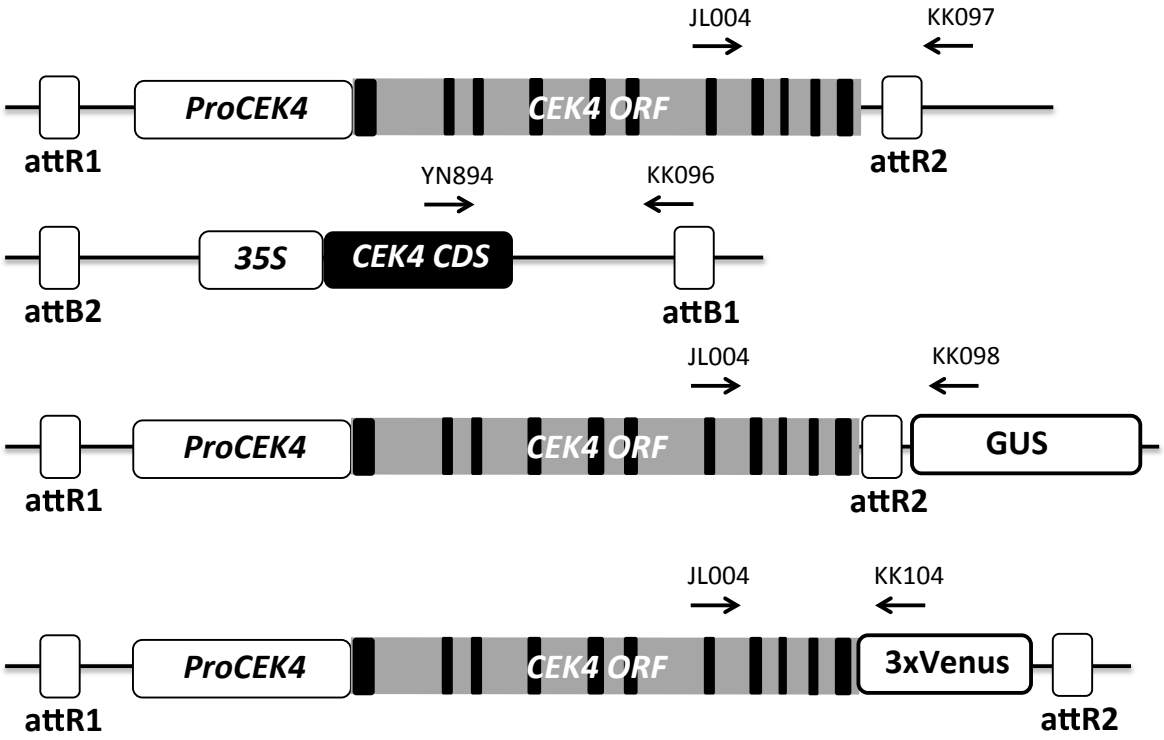


Supplemental Figure 1: Vegetative growth phenotype of 28-day old *cek4-1/+* mutant. **(A-D)** Overview **(A,B)** and detached rosette leaves **(C,D)** of the wild type (WT) Col-0 **(A,C)** and *cek4-1/+* mutant **(B,D)**. **(E)** Flowering time of *cek4-1/+* and wild type Col-0. *n=32,* Error bars are SD*,* Bars, 1 cm.



Supplemental Figure 2: Expression of CEK4 in mature seeds by histochemical GUS staining of *ProCEK4:CEK4-GUS cek4-1/-*. **(A)** Mature seed of *ProCEK4:CEK4-GUS cek4-1/-* showing GUS stain in embryos and the chalazal region. A box indicates the region magnified in **(B)**. **(B)** Magnified image of **(A)** indicating the aleurone layer (red arrow) stained with GUS. **(C)** The embryo separated from the testa showing GUS stain in the endosperm region. **(D)** The aleurone layer separated from the seed coat. Bars in panels A, B and C, 100 μm; D, 50 μm.



Supplemental Figure 3: Annealing position of primers used for genotyping in Fig. 4J. The diagrams show structure of plasmid vectors constructed in this work. Black box, exon; gray box, intron; white box, other sequences; line, plasmid vector sequence; arrows, annealing position of the primers. CDS, protein coding sequences; ORF, open reading frame; Pro, promoter.

Supplemental Table 1: The Arabidopsis CEK gene family.

Name	Gene locus	Amino acid	Molecular mass (Da)	TMD
CEK1	At1g71697	346	40,016	0
CEK2	At1g74320	350	41,016	0
CEK3	At4g09760	346	40,350	0
CEK4	At2g26830	374	42,859	0

TMD, transmembrane domain

Supplemental Table 2: Polar glycerolipid composition (mol%) of the fourteen-day-old seedlings of homozygous *cek1-1*, *cek2-1* and *cek3-1* mutants and the wild type (WT) Col-0 and Col-8 as controls.

	cek1-1	*cek2-1*	*cek3-1*	WT (Col-0)	WT (Col-8)
MGDG	35.0 ± 2.4	32.6 ± 1.0	34.5 ± 0.5	34.0 ± 0.9	35.3 ± 0.8
DGDG	15.1 ± 1.5	16.5 ± 2.2	13.2 ± 2.5	14.0 ± 2.4	16.2 ± 1.3
PtdCho	22.2 ± 1.1	22.9 ± 1.4	24.4 ± 2.6	24.3 ± 2.3	21.5 ± 1.1
PtdEtn	12.4 ± 1.1	13.2 ± 1.1	14.9 ± 2.1	12.6 ± 1.2	12.8 ± 0.9
PtdGro	9.5 ± 0.7	8.8 ± 1.1	7.9 ± 2.6	9.4 ± 0.7	9.2 ± 0.3
PtdIno	5.8 ± 0.9	6.1 ± 0.7	5.2 ± 0.9	5.7 ± 0.4	5.1 ± 0.1

Data are mean±SD from 3 biological replicates.

Supplemental Table 3: Fatty acid composition (mol%) of the polar glycerolipid classes in fourteen-day-old seedlings of *cek1-1*, *cek2-1*, *cek3-1* and the wild types (WTs) Col-0 and Col-8.

	cek1-1	*cek2-1*	*cek3-1*	WT (Col-8)	WT (Col-0)
MGDG					
16:0	3.52 ± 1.74	3.43 ± 0.67	3.46 ± 0.64	2.65 ± 0.78	2.64 ± 0.71
16:1	1.11 ± 0.27	0.99 ± 0.50	0.87 ± 0.04	1.36 ± 0.51	1.15 ± 0.17
16:2	2.17 ± 0.30	2.32 ± 0.39	2.19 ± 0.62	2.51 ± 0.68	2.53 ± 0.38
16:3	28.80 ± 1.66	27.11 ± 4.69	25.25 ± 2.27	28.91 ± 2.54	28.59 ± 3.11
18:0	0.81 ± 0.43	0.86 ± 0.10	0.83 ± 0.36	0.76 ± 0.36	0.61 ± 0.11
18:1	0.72 ± 0.18	0.88 ± 0.17	1.45 ± 0.80	0.95 ± 0.71	1.06 ± 0.52
18:2	2.88 ± 0.44	3.80 ± 1.33	5.13 ± 2.86	3.68 ± 1.25	4.24 ± 1.86
18:3	59.99 ± 2.29	60.61 ± 3.95	60.83 ± 1.68	59.18 ± 1.73	59.19 ± 0.62
DGDG					
16:0	15.87 ± 2.45	14.15 ± 2.95	13.77 ± 2.91	14.31 ± 0.31	13.56 ± 1.14
16:1	0.82 ± 0.31	1.02 ± 0.60	1.07 ± 0.78	1.17 ± 0.65	1.31 ± 0.23
16:2	3.10 ± 0.68	3.33 ± 0.80	3.18 ± 0.75	3.02 ± 1.13	3.02 ± 0.34
16:3	2.52 ± 0.47	2.23 ± 0.73	2.22 ± 0.58	2.50 ± 0.21	2.36 ± 0.74
18:0	1.71 ± 0.54	1.82 ± 0.07	2.04 ± 0.63	1.85 ± 0.54	1.47 ± 0.63
18:1	1.30 ± 0.42	1.42 ± 0.11	1.68 ± 0.57	1.08 ± 0.29	1.97 ± 0.93
18:2	5.76 ± 0.55	6.12 ± 1.22	5.35 ± 1.30	6.27 ± 0.61	5.50 ± 0.34
18:3	68.92 ± 4.26	69.91 ± 3.80	70.69 ± 4.65	69.81 ± 1.56	70.81 ± 2.71
PtdCho					
16:0	22.79 ± 0.59	20.22 ± 2.80	19.56 ± 3.05	20.94 ± 2.28	19.91 ± 0.85
16:1	0.91 ± 0.30	1.11 ± 0.11	0.96 ± 0.30	1.16 ± 0.32	1.25 ± 0.27
16:2	2.04 ± 0.56	2.15 ± 0.50	1.84 ± 0.66	1.58 ± 0.54	1.61 ± 0.57
16:3	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
18:0	2.38 ± 0.55	2.00 ± 0.12	2.09 ± 0.16	2.14 ± 0.39	2.17 ± 0.52
18:1	5.74 ± 1.10	5.52 ± 0.34	5.27 ± 1.28	5.18 ± 1.36	6.86 ± 1.44
18:2	35.31 ± 0.43	35.54 ± 1.45	37.09 ± 1.05	37.85 ± 2.11	37.89 ± 2.11
18:3	30.60 ± 1.62	33.18 ± 1.41	32.81 ± 1.87	30.97 ± 0.99	30.06 ± 3.45
PtdEtn					
16:0	30.19 ± 1.74	27.53 ± 2.12	27.65 ± 2.38	29.01 ± 1.27	27.40 ± 2.19
16:1	1.95 ± 0.92	1.97 ± 0.22	1.82 ± 0.03	1.89 ± 0.15	2.29 ± 0.51
16:2	3.35 ± 1.00	3.43 ± 0.50	2.50 ± 0.20	2.73 ± 0.48	2.70 ± 0.76
16:3	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
18:0	2.85 ± 0.56	2.27 ± 0.27	2.79 ± 0.55	2.62 ± 0.65	2.29 ± 0.43
18:1	4.62 ± 0.61	4.68 ± 0.65	5.22 ± 1.67	3.70 ± 0.51	5.21 ± 1.04
18:2	37.34 ± 1.72	37.66 ± 1.51	38.05 ± 1.35	38.95 ± 1.20	39.13 ± 2.03
18:3	19.70 ± 1.35	22.46 ± 2.01	21.97 ± 1.93	21.11 ± 0.69	20.98 ± 0.31
PtdGro					
16:0	27.20 ± 3.72	27.33 ± 2.25	25.32 ± 0.59	25.82 ± 3.80	24.92 ± 2.10
16:1	32.51 ± 2.56	27.86 ± 1.15	28.29 ± 3.96	31.89 ± 5.05	30.08 ± 2.66
16:2	4.19 ± 1.39	5.06 ± 1.36	4.52 ± 2.37	4.00 ± 0.43	3.80 ± 1.01
16:3	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
18:0	2.60 ± 1.06	2.44 ± 0.86	2.63 ± 0.82	2.40 ± 1.00	2.24 ± 0.43
18:1	4.05 ± 0.94	4.94 ± 0.84	5.54 ± 1.72	4.51 ± 0.54	5.11 ± 1.00
18:2	6.71 ± 0.24	7.97 ± 0.56	8.69 ± 2.12	8.27 ± 0.88	8.69 ± 1.49
18:3	22.74 ± 2.68	24.39 ± 3.81	25.01 ± 2.13	23.10 ± 0.82	25.16 ± 1.99
PtdIno					
16:0	48.11 ± 3.27	44.51 ± 3.77	42.21 ± 3.31	47.97 ± 1.45	44.91 ± 3.34
16:1	2.70 ± 0.92	2.41 ± 0.42	2.27 ± 0.72	2.77 ± 0.24	2.58 ± 0.20
16:2	7.03 ± 2.77	8.18 ± 2.23	6.11 ± 1.88	6.10 ± 0.96	6.17 ± 1.61
16:3	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
18:0	3.53 ± 0.77	4.13 ± 0.88	3.61 ± 1.81	4.14 ± 1.96	4.95 ± 1.91
18:1	2.59 ± 0.90	2.98 ± 0.46	3.84 ± 1.36	2.24 ± 0.42	3.00 ± 1.06
18:2	19.48 ± 0.94	19.61 ± 1.90	23.07 ± 0.55	19.80 ± 1.26	21.31 ± 0.28
18:3	15.61 ± 1.82	16.89 ± 2.59	17.85 ± 2.34	16.20 ± 1.88	16.27 ± 2.15

Data are mean±SD from 3 biological replicates.

Supplemental Table 4: Levels of TAG and DAG (μg/mg dry weight) in mature siliques of homozygous *cek1-1*, *cek2-1* and *cek3-1* mutants and the wild type (WT) Col-8.

	TAG	DAG
cek1-1	70.97 ± 12.71	1.05 ± 0.16
cek2-1	64.34 ± 10.07	0.95 ± 0.17
cek3-1	77.55 ± 5.11	1.15 ± 0.04
WT (Col-8)	66.51 ± 5.72	0.94 ± 0.28

Data are mean±SD from 3 biological replicates.

Supplemental Table 5: Fatty acid composition (mol%) of TAG in mature siliques of *cek1-1*, *cek2-1, cek3-1* and the wild type (WT) Col-8.

TAG	*cek1-1*	*cek2-1*	*cek3-1*	WT (Col-8)
16:0	9.63 ± 0.33	9.49 ± 0.06	9.52 ± 0.04	9.53 ± 0.17
16:1	0.56 ± 0.17	0.55 ± 0.19	0.52 ± 0.19	0.55 ± 0.17
16:2	0.10 ± 0.01	0.10 ± 0.01	0.09 ± 0.01	0.09 ± 0.00
16:3	0.05 ± 0.00	0.05 ± 0.01	0.05 ± 0.00	0.05 ± 0.00
18:0	2.70 ± 0.22	2.57 ± 0.02	2.64 ± 0.14	2.69 ± 0.33
18:1	16.83 ± 2.30	14.72 ± 0.14	14.61 ± 1.19	16.63 ± 3.02
18:2	34.44 ± 0.71	33.50 ± 0.29	34.30 ± 0.34	33.57 ± 1.11
18:3	15.48 ± 1.99	17.91 ± 1.36	16.00 ± 1.02	16.14 ± 3.61
20:0	1.51 ± 0.98	0.99 ± 1.05	2.24 ± 0.07	1.46 ± 1.08
20:1	16.78 ± 1.28	18.03 ± 0.22	17.96 ± 0.76	17.36 ± 1.72
20:2	1.70 ± 0.22	1.88 ± 0.06	1.86 ± 0.06	1.71 ± 0.30
22:1	0.23 ± 0.03	0.22 ± 0.04	0.20 ± 0.03	0.21 ± 0.04

Data are mean±SD from 3 biological replicates.

Supplemental Table 6: Amounts of polar glycerolipid classes (μg/mg dry weight) in young siliques and mature siliques of *cek4-1/+* and wild type (WT) Col-8.

	Young siliques		Mature siliques	
	WT (Col-8)	*cek4-1/+*	WT (Col-8)	*cek4-1/+*
MGDG	10.7 ± 2.1	9.9 ± 0.9	13.3 ± 0.9	12.7 ± 0.1
DGDG	7.5 ± 0.4	9.1 ± 2.3	10.2 ± 1.1	11.7 ± 0.5
PtdCho	40.5 ± 1.2	39.9 ± 3.3	36.9 ± 2.1	35.9 ± 2.4
PtdEtn	16.1 ± 0.9	17.2 ± 1.8	18.1 ± 0.4	17.5 ± 0.5
PtdGro	2.0 ± 0.9	2.1 ± 0.5	1.0 ± 0.4	1.6 ± 0.2
PtdIno	23.3 ± 0.8	22.0 ± 2.1	20.4 ± 0.3	20.6 ± 1.3

Data are mean±SD from 3 biological replicates.

Supplemental Table 7: Fatty acid composition (mol%) of the polar glycerolipid classes in seedlings of *Pro35S:CEK4* line 9 and the wild type (WT) Col-0.

	Pro35S:CEK4 #9			WT (Col-0)				*Pro35S:CEK4 #9*			WT (Col-0)		
MGDG							**PtdEtn**						
16:0	1.72	±	0.39	1.82	±	0.12	16:0	32.33	±	1.59	30.96	±	0.50
16:1	1.97	±	0.26	1.64	±	0.37	16:1	0.00	±	0.00	2.39	±	2.13
16:2	2.02	±	0.10	1.98	±	0.06	16:2	0.86	±	0.75	0.74	±	0.64
16:3	32.55	±	0.48	32.45	±	0.40	16:3	0.00	±	0.00	0.00	±	0.00
18:0	0.00	±	0.00	0.00	±	0.00	18:0	1.84	±	0.48	2.62	±	0.71
18:1	1.13	±	0.02	1.13	±	0.11	18:1	3.58	±	0.56	3.96	±	0.30
18:2	2.23	±	0.34	2.32	±	0.15	18:2	36.57	±	1.32	36.36	±	1.84
18:3	58.31	±	0.49	58.61	±	0.39	18:3	24.82	±	0.81	22.98	±	1.94
DGDG							**PtdGro**						
16:0	12.71	±	0.19	13.35	±	1.23	16:0	33.26	±	0.90	32.25	±	1.39
16:1	1.17	±	1.06	1.09	±	0.99	16:1	24.30	±	2.47	24.68	±	1.26
16:2	1.44	±	0.10	1.32	±	0.23	16:2	0.62	±	0.54	1.16	±	0.23
16:3	2.55	±	0.33	2.78	±	0.45	16:3	0.00	±	0.00	0.00	±	0.00
18:0	0.97	±	0.09	1.03	±	0.32	18:0	0.76	±	0.67	1.57	±	0.37
18:1	0.65	±	0.61	0.69	±	0.35	18:1	5.62	±	0.88	5.67	±	0.52
18:2	3.70	±	0.35	3.69	±	0.18	18:2	6.85	±	0.87	7.21	±	0.23
18:3	76.81	±	0.59	76.04	±	1.15	18:3	28.59	±	0.25	27.46	±	1.21
PtdCho							**PtdIno**						
16:0	21.97	±	1.02	21.15	±	0.92	16:0	49.98	±	1.66	48.82	±	0.76
16:1	0.00	±	0.00	0.81	±	1.40	16:1	5.77	±	0.31	5.82	±	1.97
16:2	0.71	±	0.20	0.80	±	0.23	16:2	3.01	±	0.79	2.48	±	0.55
16:3	0.00	±	0.00	0.00	±	0.00	16:3	0.00	±	0.00	0.00	±	0.00
18:0	1.79	±	0.07	1.98	±	0.07	18:0	3.39	±	1.10	3.69	±	0.52
18:1	8.24	±	0.16	8.11	±	0.16	18:1	3.54	±	0.87	1.30	±	1.12
18:2	37.20	±	0.66	37.55	±	0.87	18:2	19.37	±	0.70	20.38	±	0.40
18:3	30.09	±	0.29	29.60	±	1.00	18:3	14.95	±	0.71	17.18	±	1.01

Data are mean±SD from 3 biological replicates.

Supplemental Table 8: Fatty acid composition (mol%) of the polar glycerolipid classes in young siliques of *Pro35S:CEK4* line 9 and the wild type (WT) Col-8.

	Pro35S:CEK4 #9	WT (Col-8)		*Pro35S:CEK4 #9*	WT (Col-8)
MGDG			**PtdEtn**		
16:0	15.89 ± 1.08	15.52 ± 1.76	16:0	28.64 ± 3.60	27.04 ± 0.29
16:1	5.52 ± 0.89	4.86 ± 0.92	16:1	3.55 ± 0.93	2.73 ± 0.79
16:2	7.38 ± 2.73	8.38 ± 1.53	16:2	3.55 ± 0.67	4.56 ± 0.87
16:3	7.88 ± 1.18	7.42 ± 0.27	16:3	0.00 ± 0.00	0.00 ± 0.00
18:0	6.25 ± 1.57	6.21 ± 0.94	18:0	4.16 ± 0.48	4.59 ± 0.44
18:1	4.31 ± 1.02	4.54 ± 0.43	18:1	3.99 ± 0.30	3.42 ± 0.32
18:2	14.32 ± 1.39	14.22 ± 1.80	18:2	45.82 ± 2.87	46.91 ± 2.22
18:3	38.45 ± 4.05	38.84 ± 2.81	18:3	10.30 ± 1.07	10.76 ± 0.57
DGDG			**PtdGro**		
16:0	18.81 ± 2.21	18.59 ± 1.24	16:0	32.17 ± 1.32	31.52 ± 1.99
16:1	4.52 ± 2.00	4.67 ± 2.12	16:1	15.71 ± 4.55	13.65 ± 3.95
16:2	7.77 ± 1.94	8.39 ± 1.47	16:2	27.34 ± 6.17	27.08 ± 3.97
16:3	1.05 ± 0.26	0.32 ± 0.56	16:3	0.00 ± 0.00	0.00 ± 0.00
18:0	5.60 ± 1.48	6.48 ± 0.54	18:0	12.65 ± 0.65	14.31 ± 2.05
18:1	3.27 ± 0.41	3.10 ± 0.64	18:1	7.35 ± 3.24	8.70 ± 3.27
18:2	13.54 ± 1.42	13.93 ± 0.96	18:2	4.78 ± 1.21	4.74 ± 2.08
18:3	45.45 ± 4.86	44.53 ± 3.22	18:3	0.00 ± 0.00	0.00 ± 0.00
PtdCho			**PtdIno**		
16:0	19.27 ± 0.89	19.47 ± 0.69	16:0	42.89 ± 2.47	40.90 ± 1.10
16:1	1.36 ± 0.31	0.86 ± 0.85	16:1	1.46 ± 1.27	2.25 ± 0.93
16:2	1.72 ± 0.45	2.01 ± 0.32	16:2	2.93 ± 0.46	3.73 ± 0.43
16:3	0.00 ± 0.00	0.00 ± 0.00	16:3	0.00 ± 0.00	0.00 ± 0.00
18:0	3.39 ± 0.30	3.51 ± 0.12	18:0	5.40 ± 0.39	5.94 ± 0.24
18:1	4.58 ± 0.43	5.07 ± 0.53	18:1	2.47 ± 0.83	3.05 ± 0.38
18:2	57.17 ± 0.63	56.70 ± 1.58	18:2	30.86 ± 1.68	30.61 ± 0.79
18:3	12.52 ± 0.42	12.38 ± 0.11	18:3	13.99 ± 0.87	13.53 ± 0.14

Data are mean±SD from 3 biological replicates.

Supplemental Table 9: Fatty acid composition (mol %) of the polar glycerolipid classes in mature siliques of *Pro35S:CEK4* line 9 and the wild type (WT) Col-8.

	Pro35S:CEK4 #9			WT (Col-8)				*Pro35S:CEK4 #9*			WT (Col-8)		
MGDG							**PtdEtn**						
16:0	4.41	±	0.39	5.06	±	0.65	16:0	26.30	±	1.25	26.74	±	0.14
16:1	2.31	±	0.65	3.38	±	1.26	16:1	1.72	±	0.37	2.19	±	0.70
16:2	3.04	±	0.37	3.75	±	0.58	16:2	1.82	±	0.30	1.96	±	0.03
16:3	15.26	±	1.74	15.06	±	0.80	16:3	0.00	±	0.00	0.00	±	0.00
18:0	1.34	±	0.45	1.03	±	0.26	18:0	2.95	±	0.30	2.30	±	0.06
18:1	2.04	±	0.52	2.39	±	0.26	18:1	4.00	±	0.67	3.36	±	0.12
18:2	9.25	±	1.02	9.22	±	0.62	18:2	42.71	±	2.22	46.05	±	0.89
18:3	62.35	±	1.03	60.12	±	1.43	18:3	20.49	±	0.98	17.39	±	1.46
DGDG							**PtdGro**						
16:0	10.49	±	1.57	12.25	±	1.23	16:0	42.31	±	2.36	43.49	±	2.50
16:1	2.07	±	0.82	2.86	±	1.78	16:1	15.10	±	2.02	15.25	±	2.15
16:2	2.92	±	0.44	2.98	±	0.28	16:2	25.56	±	1.16	25.30	±	2.46
16:3	1.85	±	0.04	1.98	±	0.10	16:3	0.00	±	0.00	0.00	±	0.00
18:0	2.65	±	1.05	2.54	±	0.57	18:0	17.03	±	2.86	15.96	±	2.94
18:1	2.41	±	0.39	2.35	±	0.20	18:1	0.00	±	0.00	0.00	±	0.00
18:2	9.08	±	0.62	9.11	±	0.42	18:2	0.00	±	0.00	0.00	±	0.00
18:3	68.54	±	1.31	65.93	±	3.69	18:3	0.00	±	0.00	0.00	±	0.00
PtdCho							**PtdIno**						
16:0	16.42	±	0.39	18.77	±	0.84	16:0	41.01	±	0.44	42.05	±	1.94
16:1	1.28	±	0.22	1.19	±	0.50	16:1	1.23	±	0.63	1.29	±	0.03
16:2	0.88	±	0.06	1.13	±	0.09	16:2	1.72	±	0.07	2.08	±	0.40
16:3	0.00	±	0.00	0.00	±	0.00	16:3	0.00	±	0.00	0.00	±	0.00
18:0	2.34	±	0.08	2.18	±	0.14	18:0	3.67	±	0.19	3.49	±	0.45
18:1	7.62	±	0.36	7.24	±	0.29	18:1	3.57	±	0.23	3.83	±	0.26
18:2	49.18	±	1.78	50.99	±	1.44	18:2	32.19	±	0.62	32.81	±	0.45
18:3	22.27	±	1.33	18.50	±	1.21	18:3	16.61	±	1.00	14.45	±	1.28

Data are mean±SD from 3 biological replicates.

Supplemental Table 10: Sequence of oligonucleotide primers used in this study.

No.	Sequence (5' to 3')
YN533	CCCTCGAGAACAATGGCGATCAAGACAAAGACTAGTC
YN550	GCTACACGAAGATCATCTGCAGAAAGAG
YN748	GCGTGGACCGCTTGCTGCAACT
YN894	CCTCAGCTGTGGGTTGATATCTTGAAGTTC
YN895	GTATGATCCATACTCGAAATCAATCAAGTATAG
YN896	GTAAACCCCCCAAAGTAGTTGATATCTTGTTTG
YN1004	ACGATGGGTGGTACTGAAAAGAATGTAGAG
YN1005	CGTAATCTGTCCCAAAGCAAAGCC
YN1016	ATATTGACCATCATACTCATTGC
YN1164	CACCGCTGATGCATGCATGCTTCGTTGTTTATC
YN1219	CTGAAACAAGAACTGTATCAAACCGG
YN1295	GACTCCAAATTGGCTTATTCATCCTCC
YN1427	TACATCTCACCTCTCAGCATCGCTGCCTTTGGTTGGCCAAAATGGTTAAA
YN1429	CCAACTATTCAAGTGAAGGAGG
YN1442	CCGCTCGAGATGGGAGCAGCGAAGAATATCTGG
YN1443	CGGGATCCCTACAGCGATGCTGAGAGGTGAGAT
JL004	ATGTTAGCAATCTATTCTTTGC
KK008	ATTTTGCCGATTTCGGAAC
KK096	CCCGGCGCCATGGCCGCGGGATAT
KK097	CTGCAGGCGGCCGCACTAGTGATATC
KK098	CACTTCCTGATTATTGACCCACACTTTGCCG
KK104	GCGAAGCACTGCAGGCCGTAGCC