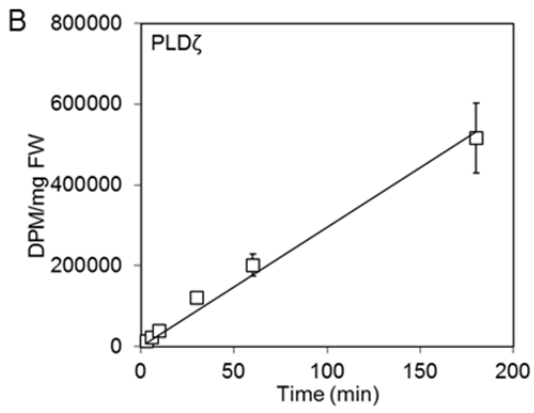
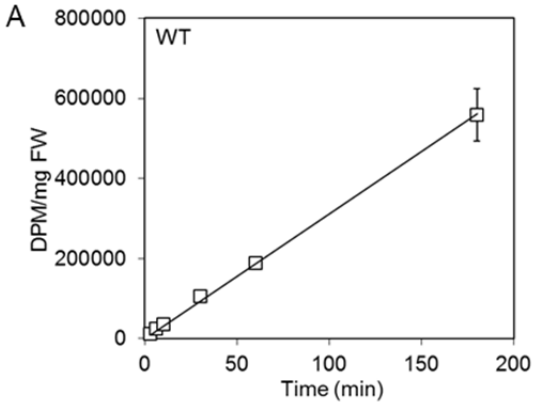


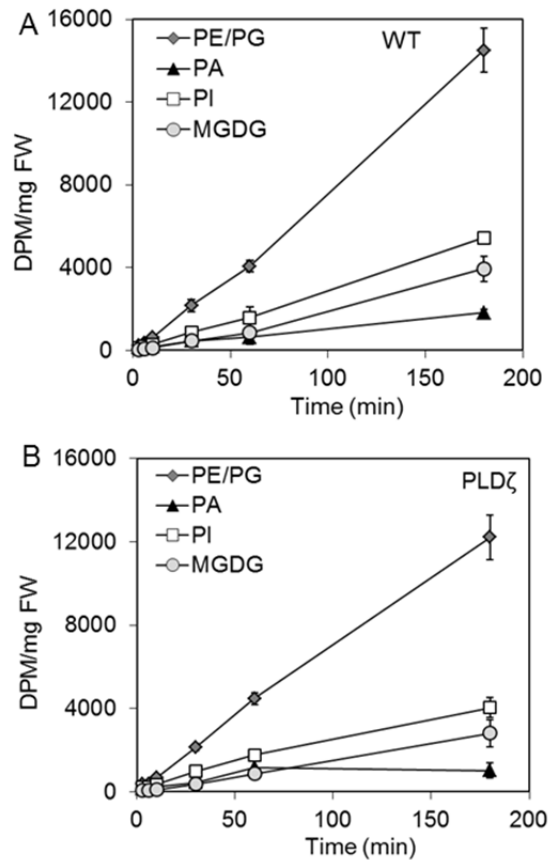
Fig. S1. Changes in fatty acid composition of minor fatty acids in seed lipid during seed development of WT and PLD ζ . (A) Arachidic acid (20:0). (B) Eicosadienoic acid (20:2). (C) Eicosatrienoic acid (20:3). (D) Docosanoic acid (22:0). (E) Erucic acid (22:1) (SD, n=3). Significant differences (T test, P < 0.05) between PLD ζ and WT are denoted with an asterisk.

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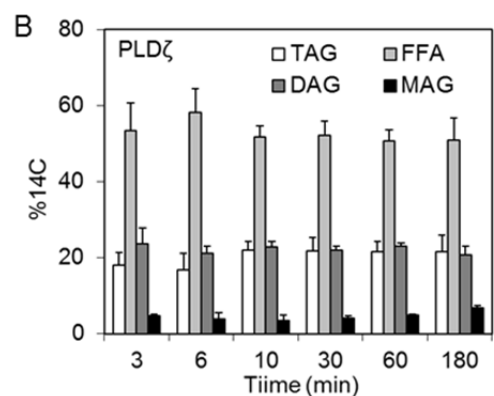
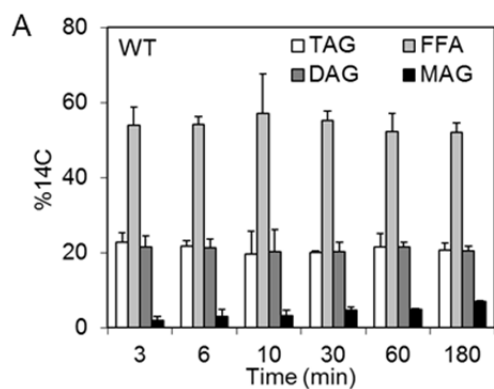


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Fig. S2. Total radioactivity incorporation into fatty acids of seed lipids during [^{14}C]acetate labeling of WT (A) and PLD ζ (B) developing seeds (SD, n=3, time points: 3, 6, 10, 30, 60, 180 min).

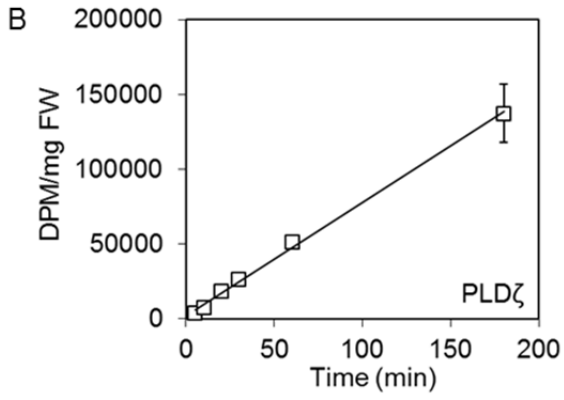
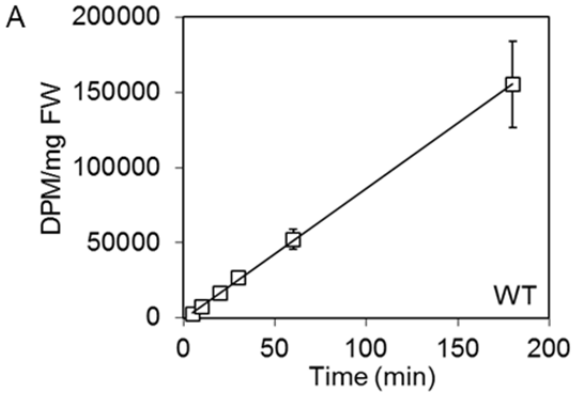


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 18 **Fig. S3.** Incorporation of [¹⁴C]acetate in to fatty acids of PE/PG, PA, PI and MGDG in WT (A) and PLD ζ (B)
 19 developing embryos (SD, n=3, time points: 3, 6, 10, 30, 60, 180 min).
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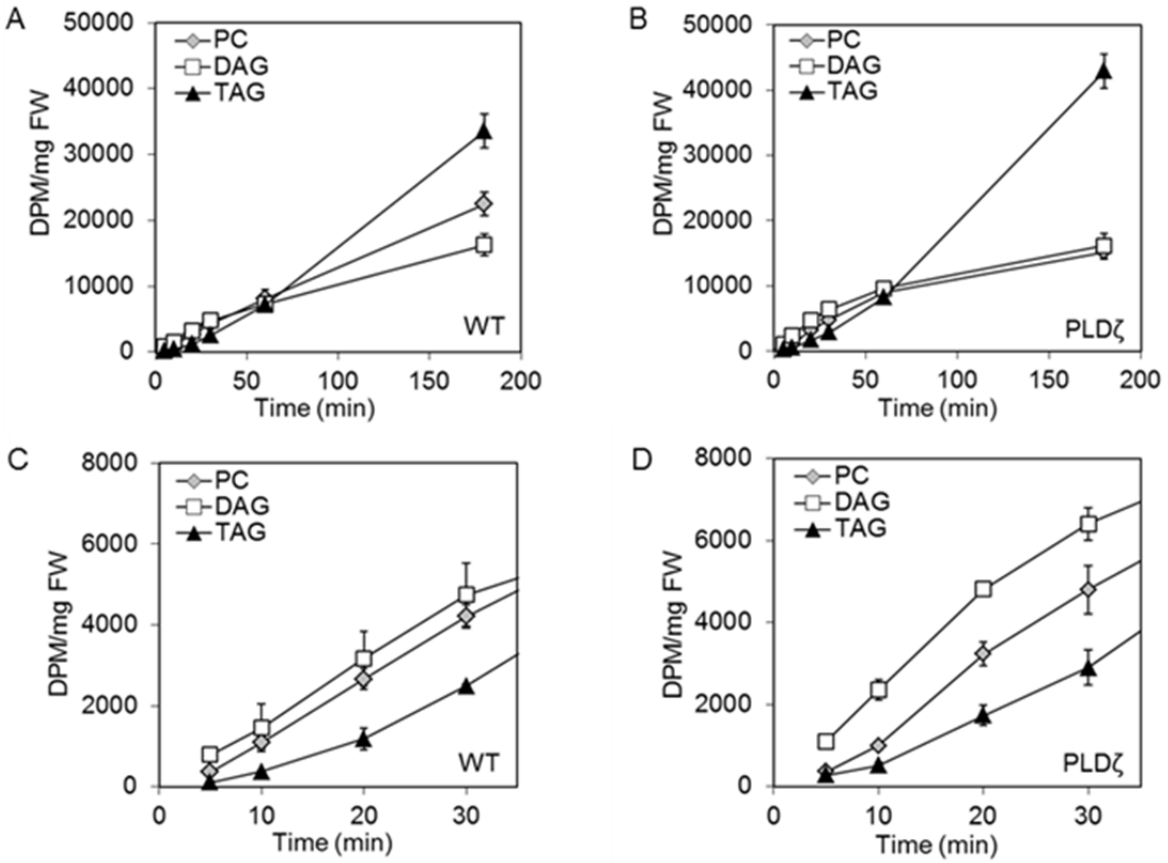
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 23 **Fig. S4.** Regiochemistry of [¹⁴C]acetate labeling in fatty acids incorporated into TAG. Radioactive TAG was
 24 digested with *Rhizomucor miehei* lipase as described in Materials and Methods. Products of lipase digestion of
 25 [¹⁴C]TAG were measured and percentage of each product over total was calculated. (A) WT. (B) PLD_ζ (SD, n=3,
 26 time points: 3, 6, 10, 30, 60, 180 min).

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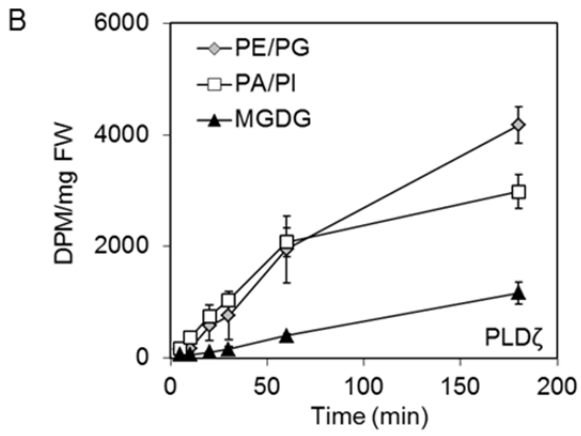
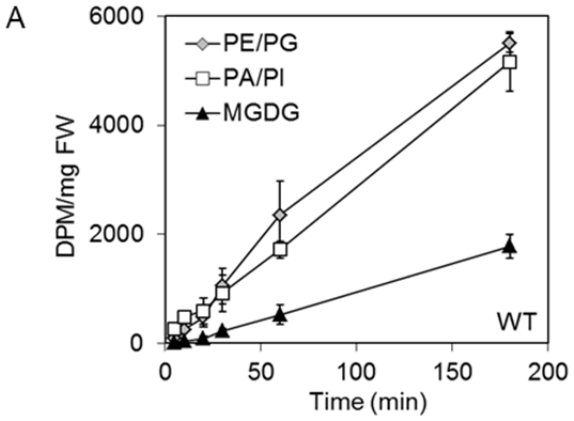


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Fig. S5. Total radioactivity incorporation into fatty acids of seed lipids during [^{14}C]glycerol labeling of WT (A) and PLD ζ (B) developing seeds (SD, n=3, time points: 5, 10, 20, 30, 60, 180).

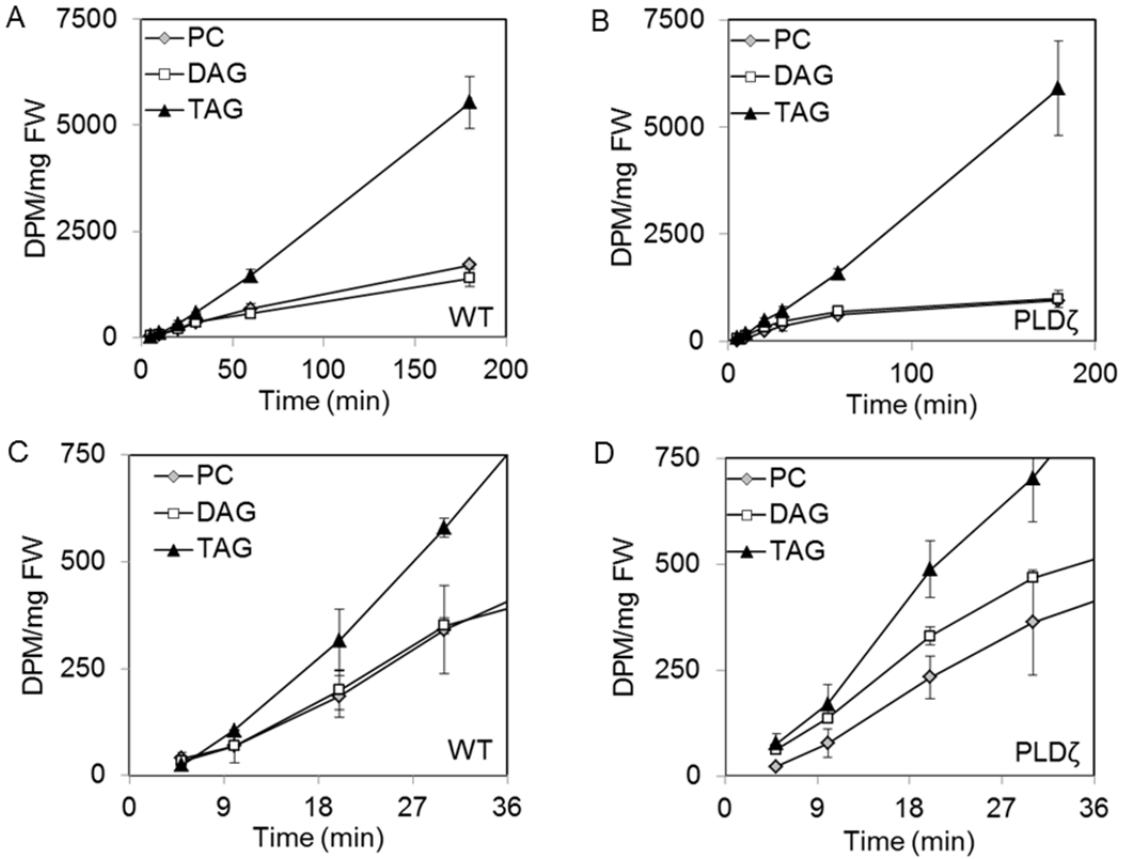


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 35 **Fig. S6.** Accumulation of total labeled PC, DAG and TAG in WT (A) and PLD ζ (B) developing embryos from
 36 [^{14}C]glycerol labeling (SD, n=3, time points: 5, 10, 20, 30, 60, 180). The early labeling time frame is redrawn in (C,
 37 D) for WT and PLD ζ respectively.
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Fig. S7. Accumulation of labeled PE/PG, PA/PI and MGDG in WT (A) and PLD ζ (B) developing embryos from [14 C]glycerol labeling (SD, n=3, time points: 5, 10, 20, 30, 60, 180).



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Fig. S8. Incorporation of [¹⁴C]-glycerol into acyl chains of glycerolipids during labeling of WT and PLD_ζ developing embryos. (A) [¹⁴C]-glycerol into acyl chains of TAG, DAG and PC in WT embryos. (B) [¹⁴C]-glycerol into acyl chains of TAG, DAG and PC in PLD_ζ embryos (SD, n=3, time points: 5, 10, 20, 30, 60, 180). The early labeling time frame is redrawn in (C, D) for WT and PLD_ζ respectively.

55 **Table S1.** Initial labeling of glycerol backbone. 5 and 10 minute time points from [¹⁴C]-glycerol incorporation into
56 the backbone of lipids were linearly regressed to obtain the initial rate of labeling (i.e. slope) and the ratio of slopes,
57 PC/TAG was calculated to evaluate the relative use of *de novo* DAG for PC and TAG (n=3).
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	DAG	PC	TAG	PC/TAG
WT	124.5 ± 64.20	141.3 ± 29.45	36.50 ± 4.482	3.9
OE	235.6 ± 32.33	119.8 ± 35.55	28.13 ± 11.89	4.3

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