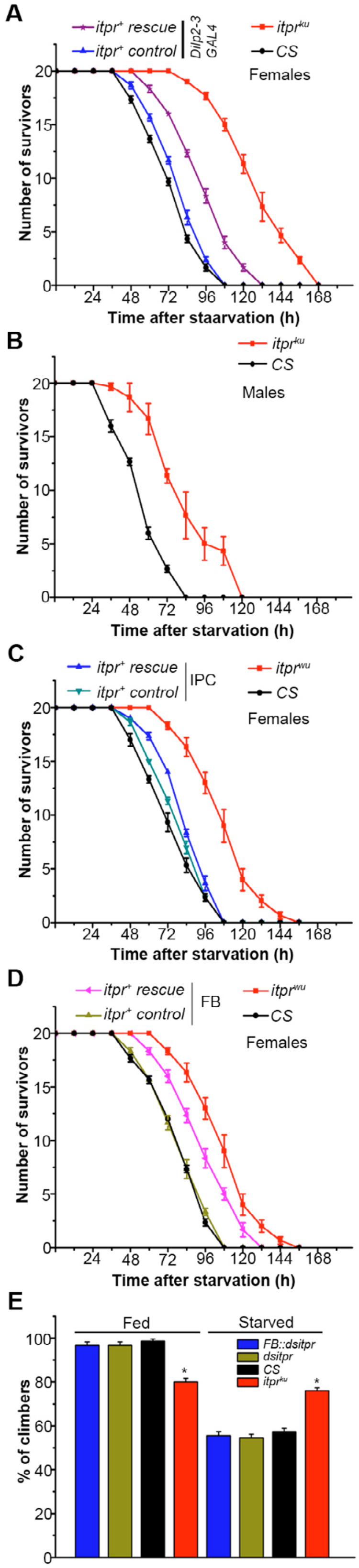

Fig. S1. Stored lipids, starvation resistance and motor activity of *itpr* mutants and tissue-specific *itpr* RNAi knock-downs. (A) Viability profile of *itpr*^{ku} females after rescue by expression of *itpr*+ through an alternate and independent *Dilp2GAL4* construct referred to as *Dilp2-3GAL4* (Ikeya et al., 2002). (B) Viability profile of *Drosophila* males of the indicated genotypes upon starvation. (C,D) Viability profiles of *Drosophila* females of a second viable allelic *itpr* mutant combination *(itpr*$^{wc703/ug3}$) upon starvation. (C) *itpr*$^{wc703/ug3}$ (*itpr*^{wu}) females were resistant to starvation and this phenotype could be rescued by expression of an *itpr*$^{+}$ cDNA in the IPCs. (D) A partial rescue of starvation was observed by expression of the *itpr*$^{+}$ cDNA in the fat body. (E) Quantification of the motor ability of indicated genotypes by measuring their climbing ability. The climbing ability of *itpr*^{ku} females was reduced compared to *CS* under fed conditions (*P<0.001; Students *t*-test) but increased upon starvation (*P<0.001; Students *t*-test). Climbing ability of flies with knock-down of *itpr* in the fat bodies was similar to *CS*.

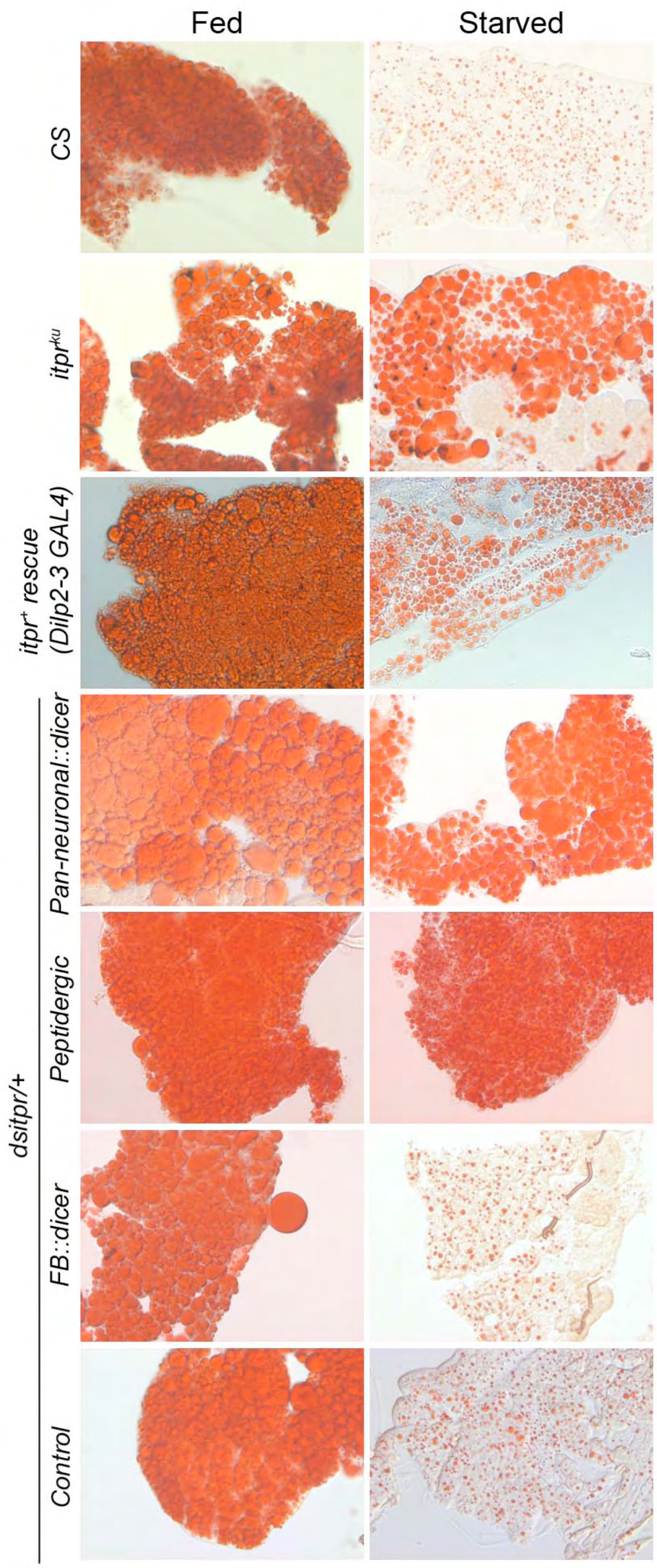

Fig. S2. **Stored lipids in abdominal fat body cells of *itpr* mutants and tissue-specific *itpr* RNAi knock-downs.** Oil Red O stained lipid droplets in fat body dissected from fed and starved adult females of the following genotypes: *CS* (wild-type), $itpr^{ku}$, $itpr^{+}$ rescue of $itpr^{ku}$ with *Dilp2-3GAL4* ($UASitpr^{+}/+;\ +/+;\ itpr^{ka1091}/itpr^{ug3}$, *Dilp2-3GAL4*), knock-down of *itpr* by *dsitpr* in the indicated cellular domains and the control (*dsitpr*/+). The *GAL4* drivers used were Pan-neuronal, $Elav^{C155}GAL4$; Peptidergic neurons, *dimmGAL4* and Fat body, *C729GAL4*. Stored lipids remain high after starvation in $itpr^{ku}$ and in the strain with pan-neuronal and peptidergic neuron knock down of *dsitpr*, as compared to knock down of *itpr* in fat bodies, controls and CS.

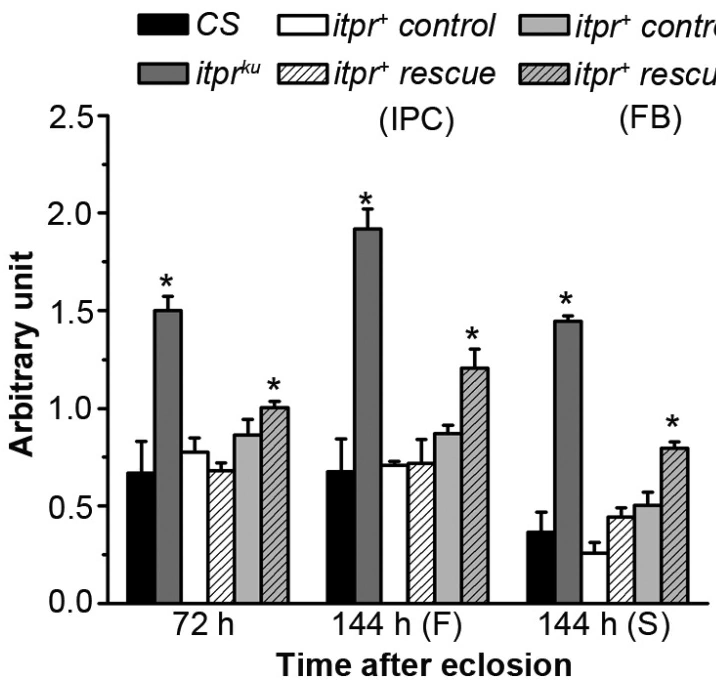

Fig. S3. Quantification of TAGs by densitometric analysis of the TAG bands after thin-layer chromatography, in the indicated genotypes.

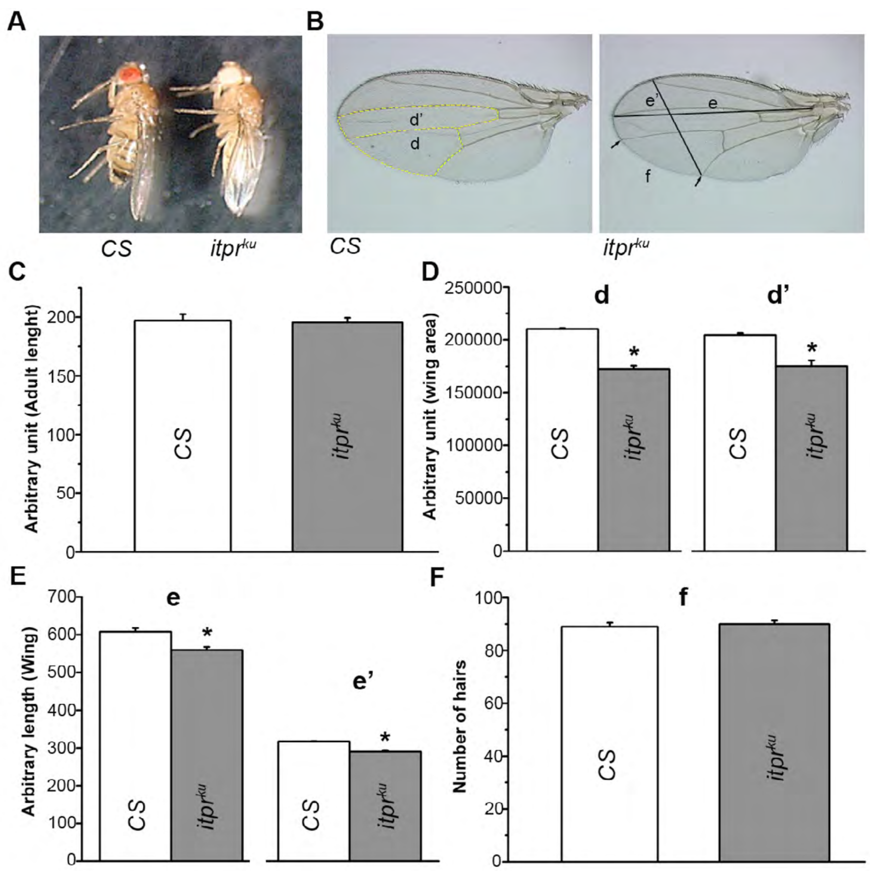

Fig. S4. Size measurements of *itpr^{ku}* females reveal a small but significant reduction in growth. (A) Representative females of the indicated genotypes 24-48 hours after eclosion. (B) Representative photographs of dissected wings from adult females of the indicated genotypes. (C) Mean body length calculated from photographs of three females each of the indicated genotypes. (D) Mean area of the regions marked as d and d' in B above. The mean area is significantly reduced in wings from *itpr^{ku}* females as compared with the same region in CS (P<0.005; Student's t test). (E) Mean length of wings across e and e' as indicated in B above. *itpr^{ku}* length is significantly lower than CS (P<0.005; Students t-test). (F) Number of sensory hairs at the wing margin in the region marked as f in B above. No difference was observed in the number of hairs at the wing margin between wild-type (*CS)* and mutant (*itpr^{ku})*.

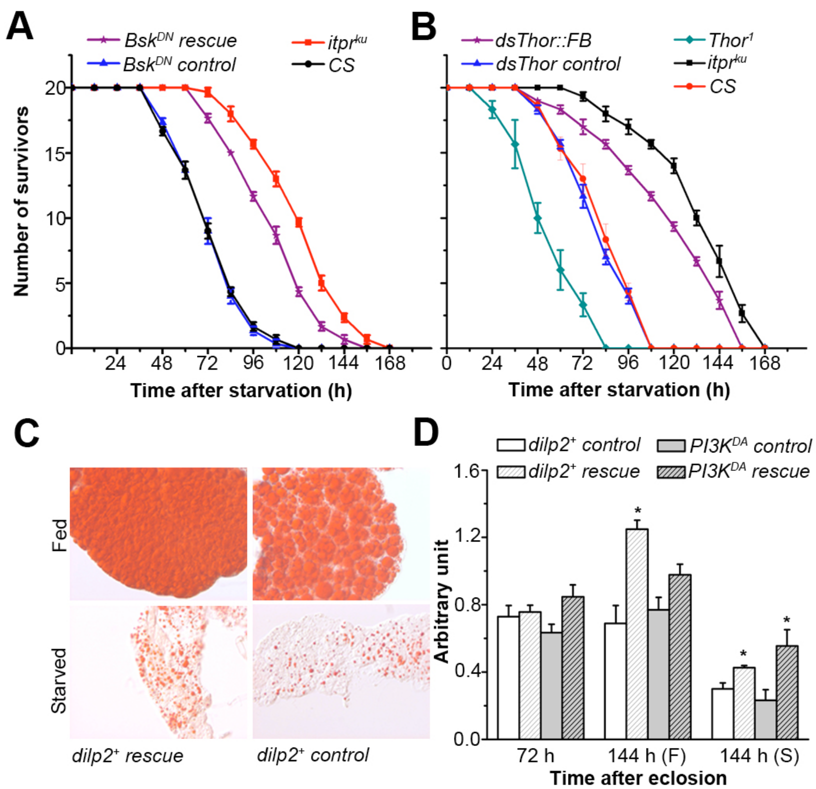

Fig. S5. **Raised insulin-signaling reduces starvation resistance in *itpr^ku*.** (A) Viability profile of *itpr^ku* females expressing a Jun-N-terminal Kinase (JNK) dominant negative (*Bsk^DN*) transgene in the IPCs. JNK is reported to reduce ILP transcription in the IPCs under stress. (B) Reduction of d4E-BP by expression of an RNAi construct (*dsThor*), partially rescues starvation resistance in *itpr^ku*. *Thor* transcripts are normally downregulated by insulin signaling. (C,D) Expression of a *dilp2*+ transgene in IPCs rescued TAG levels in the FB on starvation as observed by Oil Red-O staining (C) and (D) by densitometric quantification of TAG bands from a Thin Layer Chromatography plate. Similarly expression of a *PI3K^DA* transgene in the FB partially rescued TAG levels; *$P<0.05$ as compared with controls at the same time points.

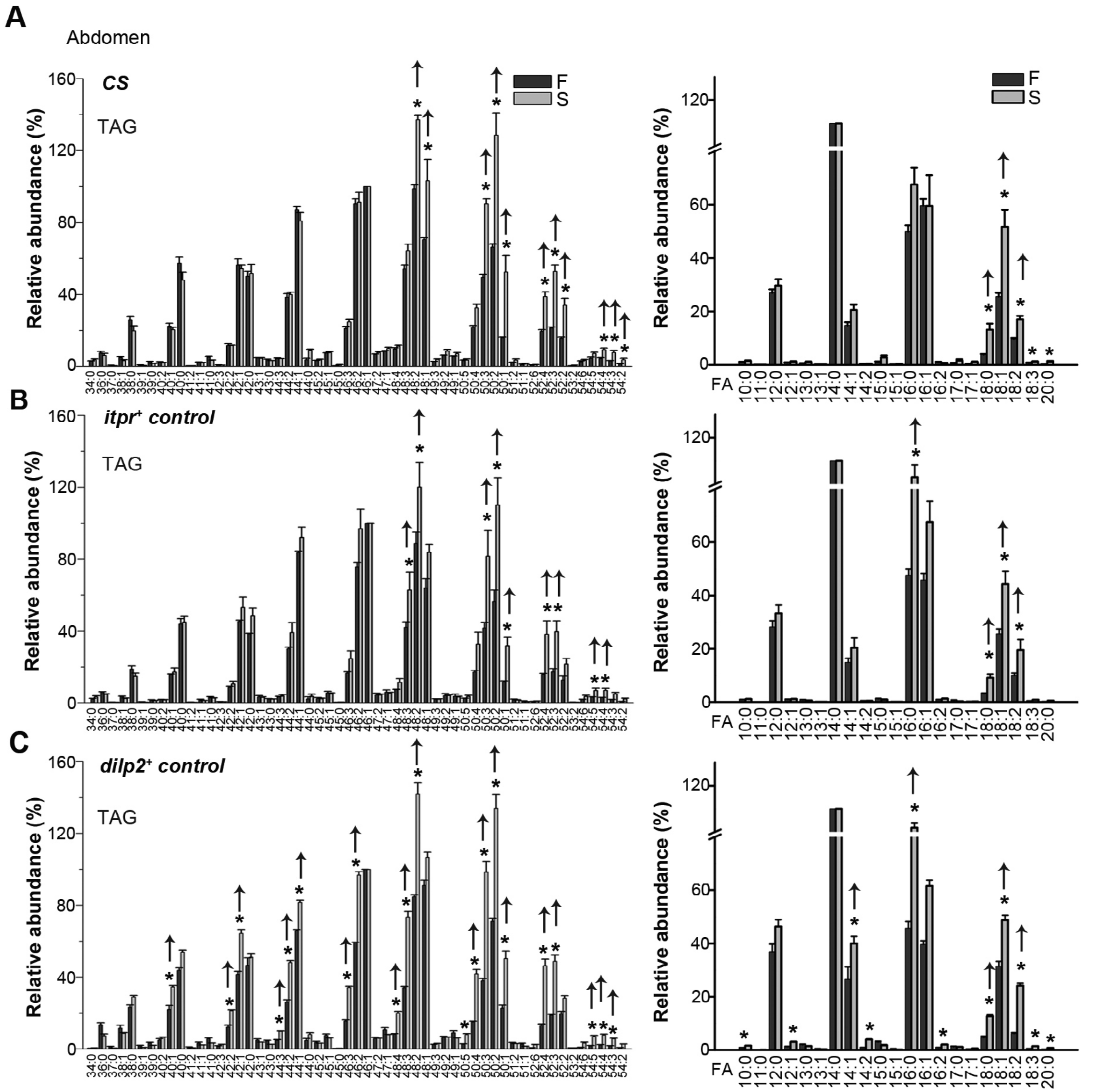

Fig. S6. Comparison of TAGs and fatty acids in fed and starved conditions between wild-type and controls of *itpr*⁺ and *dilp2*⁺trangenes. (A) *CS* flies as in Fig. 6A. (B) TAG and fatty acid profiles of *itpr*⁺ control flies are similar to wild-type (**P*<0.05, ANOVA, post-hoc bonferroni test between fed and starved conditions). (C) The relative abundance of multiple TAG and fatty acid species increases in comparison to the major TAG (46:1) and fatty acid (14:0) respectively in starved *dilp2*⁺ control flies.

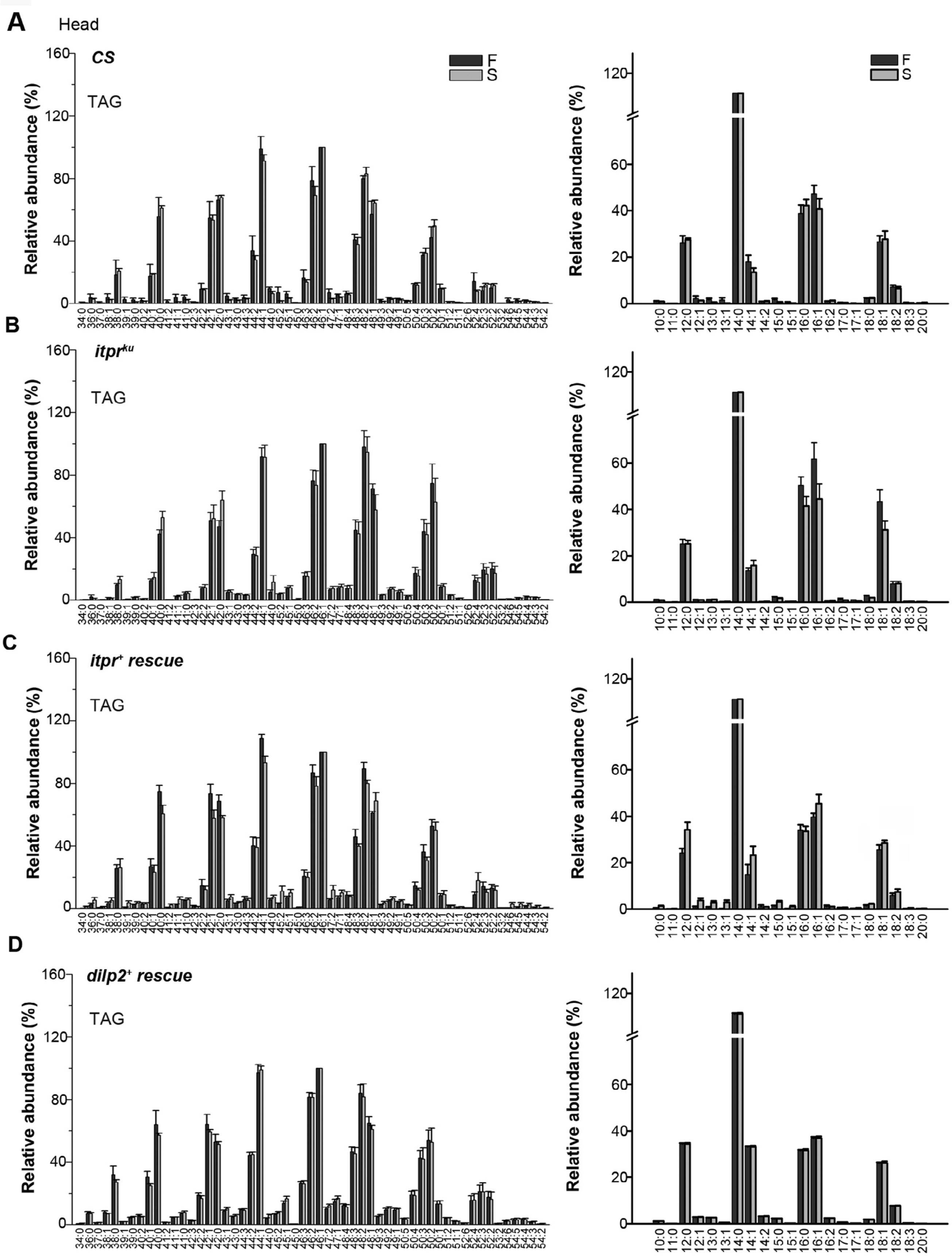

Fig. S7. Utilization of short chain and long chain TAGs under starvation is identical in the head. (A-D) TAG and fatty acid profiles from heads of the indicated genotypes. Utilization of long and short chain TAGs and their constituent fatty acids appears similar in all genotypes upon starvation. All TAG levels were normalized to the most abundant TAG 46:1 which was taken as 100%. Similarly, fatty acids were normalized to FA 14:0.

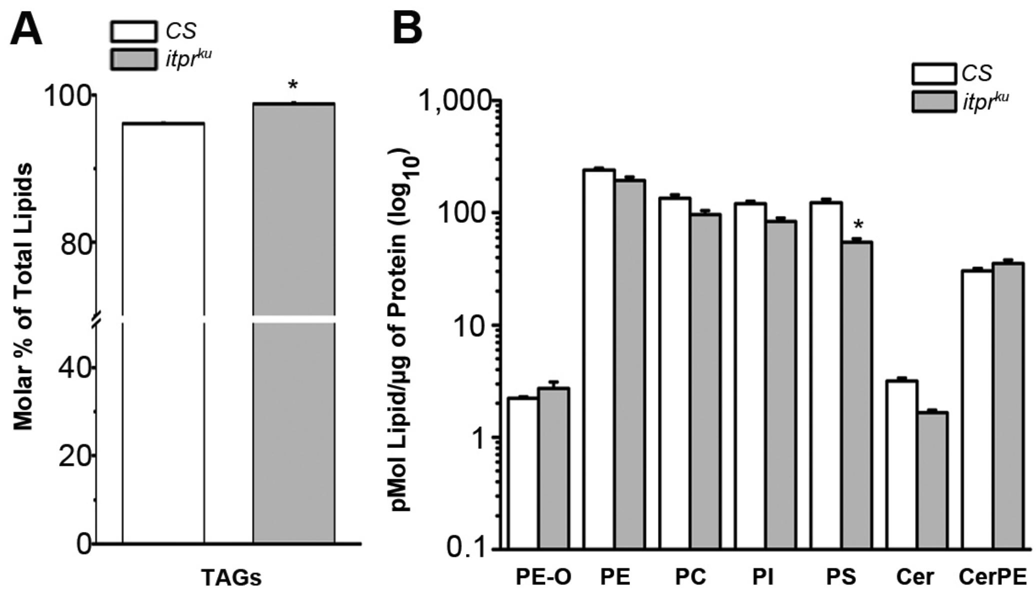

Fig. S8. (A) Measurement of TAGs in 12 hour pupae obtained from larvae. Molar percent of TAGs in total lipids of *itpr^ku* was higher than *CS* (**P*<0.005, ANOVA, post-hoc Bonferroni test). (B) Measurement of the indicated membrane lipids in 12 hour pupae as a ratio of total protein. The ratio of individual total membrane lipid classes to total protein in *itpr^ku* was not significantly different from *CS* under the same nutrient conditions, except for PS (**P*<0.05, ANOVA, post-hoc Bonferroni test).

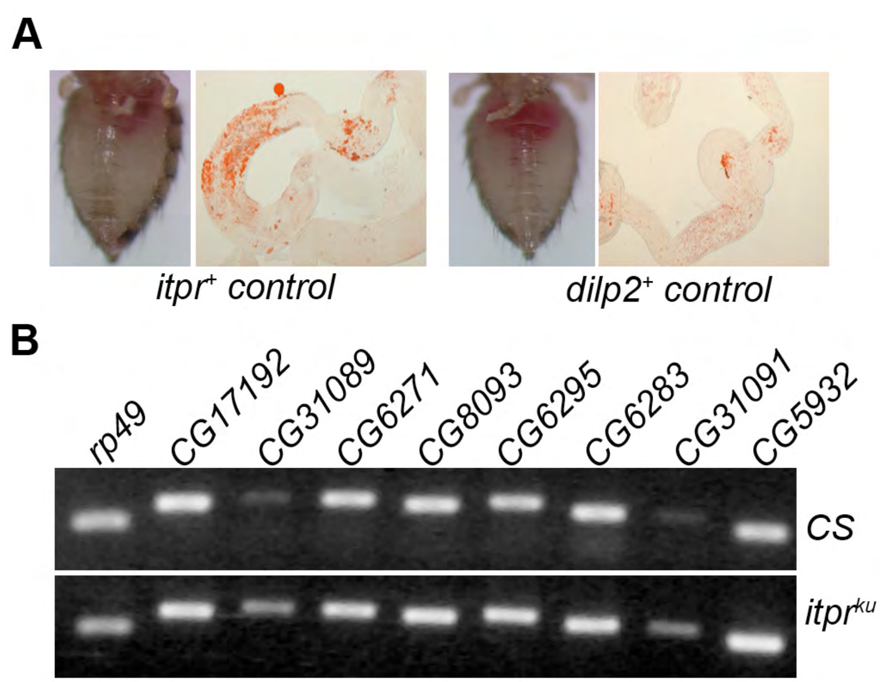

Fig. S9. (A) Overexpression of *itpr*+ and *dilp2*+ in the IPCs of wild-type *Drosophila* does not affect feeding and TAG deposits in the mid-gut. (B) Reverse transcription and polymerase chain reaction (RT-PCR) products of a control gene (*rp49*) and selected mid-gut lipase encoding genes from mid-gut RNA isolated from *CS* and *itpr^ku*.

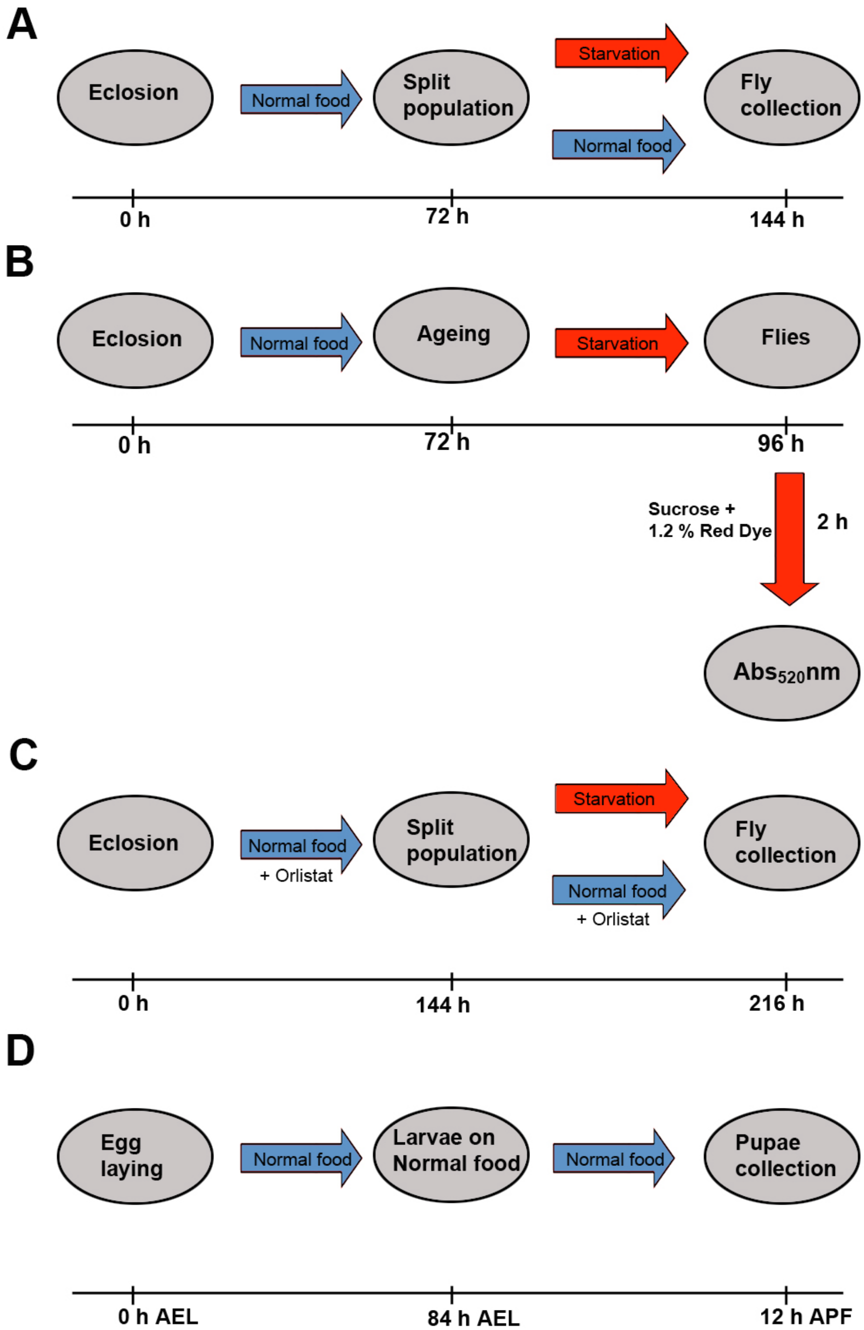

Fig. S10. Schematic of starvation assays conducted under different nutritional conditions. Protocol (A) was followed in experiments for Figs 1, 2, 3, 5, 6, supplementary material Figs S1, S2, S3, S5, S6, S7. Protocol (B) was followed for Fig. 8A,B, and supplementary material Fig. S9A. Protocol (C) was followed in Fig. 9A-C. Protocol (D) was followed in Fig. 7 and supplementary material Fig. S7.

Table S1. Quantification of lipids from *Drosophila* pupae by shotgun lipidomics. All lipids were obtained from pupae following the protocol in supplementary material Fig. S10D. Total lipids were quantified on the basis of pMol lipid/pMol of total TAG and pMol lipid/µg of protein. TAGs were quantified as pMol TAG/µg of protein and by molar % to total lipids.

Quantification based on the pMol lipid/pMol of total TAG							
m/z measured	Chemical formula	Error (ppm)	Assignment	CS on Normal food		*itpr*[ku] on Normal food	
				Average	SEM	Average	SEM
Phosphatidylethyleneamine							
698.5129	C39 H73 O7 N1 P1	−0.12ppm	**PE-O [34:3]**	1.51E-05	3.8E-06	4.86E-06	7.6E-07
716.5607	C40 H79 O7 N1 P1	0.98ppm	**PE-O [35:1]**	3.59E-06	4.7E-07	1.23E-06	1.1E-07
726.5437	C41 H77 O7 N1 P1	−0.82ppm	**PE-O [36:3]**	4.91E-05	3.0E-06	1.06E-05	3.7E-06
728.5594	C41 H79 O7 N1 P1	−0.78ppm	**PE-O [36:2]**	4.19E-05	2.6E-06	1.02E-05	3.6E-06
730.575	C41 H81 O7 N1 P1	−0.86ppm	**PE-O [36:1]**	1.06E-05	4.8E-07	2.09E-06	9.2E-07
			Total-PE-O	1.37E-04	3.6E-06	4.05E-05	1.4E-05
Phosphatidylethanolamine							
632.429435	C33 H63 O8 N1 P1	−0.39ppm	**PE [28:1]**	1.25E-05	9.9E-07	2.47E-06	7.7E-08
634.445112	C33 H65 O8 N1 P1	−0.34ppm	**PE [28:0]**	1.54E-05	7.1E-07	3.71E-06	9.3E-07
658.444994	C35 H65 O8 N1 P1	−0.51ppm	**PE [30:2]**	9.04E-06	1.5E-07	1.90E-06	8.3E-08
660.460958	C35 H67 O8 N1 P1	−0.03ppm	**PE [30:1]**	2.68E-04	1.0E-05	5.64E-05	2.7E-06
662.476303	C35 H69 O8 N1 P1	−0.49ppm	**PE [30:0]**	4.22E-05	1.4E-06	9.84E-06	2.9E-06
676.492024	C36 H71 O8 N1	−0.38pp	**PE [31:0]**	7.34E-	1.4E-	1.68E-06	1.1E-

	P1	m		06	06		07
684.46111	C37 H67 O8 N1 P1	0.19ppm	**PE [32:3]**	3.35E-05	1.5E-06	8.91E-06	1.2E-06
686.476808	C37 H69 O8 N1 P1	0.26ppm	**PE [32:2]**	8.34E-04	4.4E-05	1.80E-04	2.3E-05
688.492252	C37 H71 O8 N1 P1	−0.04ppm	**PE [32:1]**	1.59E-03	5.5E-05	3.29E-04	6.4E-05
690.506886	C37 H73 O8 N1 P1	−1.51ppm	**PE [32:0]**	5.52E-06	1.4E-06	2.21E-06	1.5E-06
698.47496	C38 H69 O8 N1 P1	−2.39ppm	**PE [33:3]**	3.02E-06	8.4E-08	9.50E-07	5.2E-08
700.49226	C38 H71 O8 N1 P1	−0.03ppm	**PE [33:2]**	3.57E-05	2.1E-06	9.73E-06	1.2E-06
702.508021	C38 H73 O8 N1 P1	0.13ppm	**PE [33:1]**	3.62E-05	3.4E-06	1.66E-05	1.0E-06
710.477663	C39 H69 O8 N1 P1	1.45ppm	**PE [34:4]**	1.90E-05	9.7E-07	4.84E-06	6.5E-07
712.492596	C39 H71 O8 N1 P1	0.44ppm	**PE [34:3]**	7.88E-04	3.2E-05	1.60E-04	2.7E-05
714.507797	C39 H73 O8 N1 P1	−0.19ppm	**PE [34:2]**	4.07E-03	1.1E-04	9.45E-04	1.9E-04
716.522466	C39 H75 O8 N1 P1	−1.55ppm	**PE [34:1]**	3.95E-03	1.0E-04	7.65E-04	1.7E-04
726.507393	C40 H73 O8 N1 P1	−0.74ppm	**PE [35:3]**	5.39E-06	3.5E-07	4.54E-06	7.9E-08
728.523116	C40 H75 O8 N1 P1	−0.64ppm	**PE [35:2]**	2.37E-05	1.0E-06	1.15E-05	1.1E-06
730.538757	C40 H77 O8 N1 P1	−0.65ppm	**PE [35:1]**	1.96E-05	1.4E-06	9.07E-06	7.6E-07
736.492086	C41 H71 O8 N1 P1	−0.26ppm	**PE [36:5]**	2.02E-05	1.1E-06	5.02E-06	1.1E-06

738.507943	C41 H73 O8 N1 P1	0.02ppm	**PE [36:4]**	5.72E-04	4.2E-05	1.22E-04	2.2E-05
740.523417	C41 H75 O8 N1 P1	−0.22ppm	**PE [36:3]**	1.17E-03	5.9E-05	2.51E-04	4.7E-05
742.53886	C41 H77 O8 N1 P1	−0.50ppm	**PE [36:2]**	1.10E-03	4.1E-05	2.47E-04	5.3E-05
744.554278	C41 H79 O8 N1 P1	−0.81ppm	**PE [36:1]**	1.47E-04	6.9E-06	4.21E-05	3.6E-06
756.555094	C42 H79 O8 N1 P1	0.28ppm	**PE [37:2]**	2.64E-06	4.3E-07	1.60E-06	7.3E-08
768.555124	C43 H79 O8 N1 P1	0.32ppm	**PE [38:3]**	4.30E-06	7.0E-07	1.31E-06	2.5E-07
770.570878	C43 H81 O8 N1 P1	0.45ppm	**PE [38:2]**	1.56E-05	1.4E-06	3.75E-06	8.7E-07
772.586519	C43 H83 O8 N1 P1	0.44ppm	**PE [38:1]**	6.37E-06	5.8E-07	4.47E-06	6.0E-07
			Total-PE	1.48E-02	4.9E-04	3.07E-03	6.0E-04
Phosphatidylcholine							
790.5606	C42 H81 O10 N1 P1	0.31ppm	**PC [32:1]**	7.10E-04	3.7E-05	1.53E-04	3.1E-05
800.5451	C43 H79 O10 N1 P1	0.51ppm	**PC [33:3]**	4.25E-05	2.1E-06	1.30E-05	2.0E-07
802.5608	C43 H81 O10 N1 P1	0.58ppm	**PC [33:2]**	8.94E-05	1.9E-06	1.76E-05	2.1E-06
804.5764	C43 H83 O10 N1 P1	0.47ppm	**PC [33:1]**	4.11E-05	2.8E-06	1.09E-05	5.6E-07
812.5452	C44 H79 O10 N1 P1	0.55ppm	**PC [34:4]**	1.06E-04	7.9E-06	2.66E-05	1.6E-06
814.561	C44 H81 O10 N1 P1	0.79ppm	**PC [34:3]**	1.49E-03	9.2E-05	3.81E-04	4.8E-05

816.5765	C44 H83 O10 N1 P1	0.60ppm	**PC [34:2]**	2.95E-03	1.3E-04	7.66E-04	1.4E-04
818.5914	C44 H85 O10 N1 P1	−0.34ppm	**PC [34:1]**	5.45E-04	6.1E-06	1.21E-04	2.6E-05
830.5922	C45 H85 O10 N1 P1	0.69ppm	**PC [35:2]**	3.81E-05	2.2E-06	9.43E-06	1.1E-06
840.5765	C46 H83 O10 N1 P1	0.61ppm	**PC [36:4]**	1.15E-03	1.1E-04	3.15E-04	3.6E-05
842.592	C46 H85 O10 N1 P1	0.46ppm	**PC [36:3]**	9.45E-04	4.9E-05	2.09E-04	3.3E-05
844.6075	C46 H87 O10 N1 P1	0.20ppm	**PC [36:2]**	1.75E-04	5.7E-06	3.70E-05	9.2E-06
			Total-PC	8.36E-03	4.3E-04	1.91E-03	3.3E-04
Phosphatidylinositol							
777.4563	C39 H70 O13 P1	0.43ppm	**PI [30:2]**	3.08E-05	2.5E-06	6.93E-06	7.0E-07
779.4719	C39 H72 O13 P1	0.43ppm	**PI [30:1]**	3.77E-05	1.6E-06	1.48E-05	1.7E-06
803.472	C41 H72 O13 P1	0.53ppm	**PI [32:3]**	3.81E-05	8.0E-07	9.25E-06	9.0E-07
805.4877	C41 H74 O13 P1	0.55ppm	**PI [32:2]**	5.20E-04	2.6E-05	1.10E-04	1.0E-05
807.5033	C41 H76 O13 P1	0.45ppm	**PI [32:1]**	2.15E-04	2.3E-05	9.28E-05	7.1E-06
819.5034	C42 H76 O13 P1	0.62ppm	**PI [33:2]**	3.10E-05	3.2E-06	6.76E-06	6.9E-07
821.519	C42 H78 O13 P1	0.55ppm	**PI [33:1]**	8.65E-06	1.6E-06	4.84E-06	1.5E-07
829.4878	C43 H74 O13 P1	0.69ppm	**PI [34:4]**	4.75E-05	1.4E-06	1.12E-05	1.2E-06

831.5034	C43 H76 O13 P1	0.62ppm	**PI [34:3]**	8.45E-04	4.5E-06	1.68E-04	2.7E-05
833.5188	C43 H78 O13 P1	0.25ppm	**PI [34:2]**	3.02E-03	3.4E-05	5.75E-04	1.4E-04
845.519	C44 H78 O13 P1	0.55ppm	**PI [35:3]**	1.58E-05	4.1E-07	5.56E-06	3.7E-07
847.5347	C44 H80 O13 P1	0.54ppm	**PI [35:2]**	3.58E-05	2.9E-06	1.05E-05	1.1E-06
855.5035	C45 H76 O13 P1	0.65ppm	**PI [36:5]**	6.09E-05	2.5E-06	1.54E-05	1.7E-06
857.519	C45 H78 O13 P1	0.50ppm	**PI [36:4]**	7.81E-04	2.5E-05	1.82E-04	2.4E-05
859.5344	C45 H80 O13 P1	0.27ppm	**PI [36:3]**	1.41E-03	3.2E-06	2.48E-04	4.9E-05
861.5499	C45 H82 O13 P1	−0.00ppm	**PI [36:2]**	3.81E-04	1.0E-05	7.83E-05	1.2E-05
889.5817	C47 H86 O13 P1	0.57ppm	**PI [38:2]**	4.41E-06	8.8E-07	1.25E-06	1.0E-07
			Total-PI	7.49E-03	6.8E-05	1.38E-03	2.5E-04
Phosphatidylserine							
730.4661	C38 H69 O10 N1 P1	−0.52ppm	**PS [32:2]**	4.13E-05	3.5E-06	9.83E-06	4.8E-07
732.4818	C38 H71 O10 N1 P1	−0.43ppm	**PS [32:1]**	1.07E-04	9.9E-06	2.49E-05	2.5E-06
734.4976	C38 H73 O10 N1 P1	−0.28ppm	**PS [32:0]**	2.12E-05	1.3E-06	8.38E-06	2.4E-07
758.4979	C40 H73 O10 N1 P1	0.14ppm	**PS [34:2]**	8.41E-04	7.5E-05	1.92E-04	1.3E-05

760.5134	C40 H75 O10 N1 P1	0.01ppm	**PS [34:1]**	7.42E-04	7.5E-05	1.70E-04	1.2E-05
774.5302	C41 H77 O10 N1 P1	1.44ppm	**PS [35:1]**	3.05E-05	2.1E-06	1.63E-05	9.6E-07
782.4982	C42 H73 O10 N1 P1	0.53ppm	**PS [36:4]**	5.43E-04	5.4E-05	1.18E-04	7.1E-06
786.5292	C42 H77 O10 N1 P1	0.14ppm	**PS [36:2]**	3.48E-03	3.1E-04	8.72E-04	6.4E-05
788.5448	C42 H79 O10 N1 P1	0.17ppm	**PS [36:1]**	1.84E-03	1.8E-04	5.37E-04	3.0E-05
			Total-PS	7.68E-03	6.5E-04	1.92E-03	1.3E-04
Ceramides							
568.4941	C34 H66 O5 N1	−0.89ppm	**Cer [32:1]**	7.23E-06	2.6E-07	1.56E-06	2.1E-07
594.5102	C36 H68 O5 N1	−0.21ppm	**Cer [34:2]**	7.20E-06	1.6E-07	3.33E-06	1.9E-07
596.526	C36 H70 O5 N1	0.02ppm	**Cer [34:1]**	8.35E-05	2.3E-06	2.18E-05	1.3E-06
622.5415	C38 H72 O5 N1	−0.10ppm	**Cer [36:2]**	9.26E-06	9.3E-07	3.51E-06	5.3E-07
624.5572	C38 H74 O5 N1	−0.03ppm	**Cer [36:1]**	7.63E-05	7.6E-06	1.77E-05	2.1E-06
650.5727	C40 H76 O5 N1	−0.23ppm	**Cer [38:2]**	2.70E-06	1.8E-07	9.22E-07	1.7E-07
652.5883	C40 H78 O5 N1	−0.37ppm	**Cer [38:1]**	6.39E-06	9.1E-07	1.58E-06	9.8E-08
			Total-Cer	1.96E-04	7.4E-06	4.88E-05	4.4E-06
Phosphatidylethanolamine-Ceramide							

629.4661	C34 H66 O6 N2 P1	−0.46ppm	**CerPE [32:2]**	2.45E-05	8.4E-07	6.46E-06	2.1E-07
631.4818	C34 H68 O6 N2 P1	−0.36ppm	**CerPE [32:1]**	1.94E-04	9.0E-06	4.15E-05	6.7E-06
645.4976	C35 H70 O6 N2 P1	−0.17ppm	**CerPE [33:1]**	2.51E-06	2.2E-07	6.78E-07	1.2E-07
657.4975	C36 H70 O6 N2 P1	−0.36ppm	**CerPE [34:2]**	8.94E-05	2.5E-06	3.13E-05	2.7E-06
659.5132	C36 H72 O6 N2 P1	−0.23ppm	**CerPE [34:1]**	8.56E-04	3.0E-05	1.82E-04	5.5E-05
661.5279	C36 H74 O6 N2 P1	−1.72ppm	**CerPE [34:0]**	2.65E-06	3.0E-07	1.08E-06	1.5E-07
673.5288	C37 H74 O6 N2 P1	−0.25ppm	**CerPE [35:1]**	7.49E-06	6.2E-07	9.40E-06	1.5E-07
685.529	C38 H74 O6 N2 P1	−0.03ppm	**CerPE [36:2]**	7.24E-05	3.1E-06	2.64E-05	3.2E-06
687.5446	C38 H76 O6 N2 P1	−0.02ppm	**CerPE [36:1]**	5.83E-04	4.1E-05	1.34E-04	3.3E-05
701.5601	C39 H78 O6 N2 P1	−0.31ppm	**CerPE [37:1]**	6.44E-06	5.9E-07	7.74E-06	1.3E-07
713.5601	C40 H78 O6 N2 P1	−0.24ppm	**CerPE [38:2]**	1.55E-05	8.2E-07	3.55E-06	6.1E-07
715.5748	C40 H80 O6 N2 P1	−1.61ppm	**CerPE [38:1]**	3.02E-05	2.4E-06	7.21E-06	2.7E-06
			Total-CerPE	1.89E-03	8.2E-05	4.32E-04	9.9E-05

Quantification based on the pMol lipid/µg of Protein							
m/z measured	Chemical formula	Error (ppm)	Assignment	CS on Normal food		*itpr*[ku] on Normal food	
				Average	SEM	Average	SEM
Phosphatidylethyleneamine							
698.5129	C39 H73 O7 N1 P1	−0.12ppm	PE-O [34:3]	2.42E-01	5.9E-02	8.30E-02	3.0E-02
716.5607	C40 H79 O7 N1 P1	0.98ppm	PE-O [35:1]	5.89E-02	1.1E-02	1.65E-02	2.9E-03
726.5437	C41 H77 O7 N1 P1	−0.82ppm	PE-O [36:3]	7.92E-01	4.6E-02	1.60E-01	1.1E-01
728.5594	C41 H79 O7 N1 P1	−0.78ppm	PE-O [36:2]	6.76E-01	3.9E-02	1.51E-01	1.2E-01
730.575	C41 H81 O7 N1 P1	−0.86ppm	PE-O [36:1]	1.70E-01	6.3E-03	2.82E-02	2.4E-02
			Total-PE-O	2.22E+00	7.4E-02	6.36E-01	4.1E-01
Phosphatidylethanolamine							
632.42943	C33 H63 O8 N1 P1	−0.39ppm	PE [28:1]	2.03E-01	2.4E-02	3.86E-02	8.4E-03
634.44511	C33 H65 O8 N1 P1	−0.34ppm	PE [28:0]	2.49E-01	1.1E-02	5.55E-02	3.6E-02
658.44499	C35 H65 O8 N1 P1	−0.51ppm	PE [30:2]	1.46E-01	8.7E-03	2.92E-02	7.3E-03
660.46096	C35 H67 O8 N1 P1	−0.03ppm	PE [30:1]	4.34E+00	2.7E-01	8.08E-01	1.7E-01
662.4763	C35 H69 O8 N1 P1	−0.49ppm	PE [30:0]	6.79E-01	1.6E-02	1.50E-01	9.9E-02
676.49202	C36 H71 O8 N1	−0.38pp	PE [31:0]	1.19E-	2.4E-	2.80E-	4.7E-

	P1	m		01	02	02	03
684.46111	C37 H67 O8 N1 P1	0.19ppm	PE [32:3]	5.41E-01	3.4E-02	1.42E-01	3.6E-02
686.47681	C37 H69 O8 N1 P1	0.26ppm	PE [32:2]	1.35E+01	9.1E-01	2.69E+00	6.0E-01
688.49225	C37 H71 O8 N1 P1	−0.04ppm	PE [32:1]	2.57E+01	1.5E+00	4.67E+00	1.1E+00
690.50689	C37 H73 O8 N1 P1	−1.51ppm	PE [32:0]	8.89E-02	2.4E-02	3.45E-02	5.1E-02
698.47496	C38 H69 O8 N1 P1	−2.39ppm	PE [33:3]	4.89E-02	3.5E-03	1.58E-02	1.5E-03
700.49226	C38 H71 O8 N1 P1	−0.03ppm	PE [33:2]	5.75E-01	2.6E-02	1.58E-01	3.6E-02
702.50802	C38 H73 O8 N1 P1	0.13ppm	PE [33:1]	5.85E-01	6.3E-02	2.80E-01	2.4E-02
710.47766	C39 H69 O8 N1 P1	1.45ppm	PE [34:4]	3.06E-01	1.6E-02	7.65E-02	1.7E-02
712.4926	C39 H71 O8 N1 P1	0.44ppm	PE [34:3]	1.27E+01	7.0E-01	2.34E+00	5.9E-01
714.5078	C39 H73 O8 N1 P1	−0.19ppm	PE [34:2]	6.57E+01	2.9E+00	1.46E+01	5.1E+00
716.52247	C39 H75 O8 N1 P1	−1.55ppm	PE [34:1]	6.38E+01	2.5E+00	1.06E+01	3.7E+00
726.50739	C40 H73 O8 N1 P1	−0.74ppm	PE [35:3]	8.69E-02	6.1E-03	7.70E-02	1.2E-04
728.52312	C40 H75 O8 N1 P1	−0.64ppm	PE [35:2]	3.82E-01	2.2E-02	1.92E-01	2.6E-02
730.53876	C40 H77 O8 N1 P1	−0.65ppm	PE [35:1]	3.16E-01	2.9E-02	1.48E-01	1.4E-02
736.49209	C41 H71 O8 N1 P1	−0.26ppm	PE [36:5]	3.25E-01	1.7E-02	7.84E-02	2.9E-02

738.50794	C41 H73 O8 N1 P1	0.02ppm	PE [36:4]	9.23E+00	7.1E-01	1.86E+00	4.8E-01
740.52342	C41 H75 O8 N1 P1	−0.22ppm	PE [36:3]	1.88E+01	1.2E+00	3.74E+00	1.0E+00
742.53886	C41 H77 O8 N1 P1	−0.50ppm	PE [36:2]	1.78E+01	9.7E-01	3.48E+00	1.2E+00
744.55428	C41 H79 O8 N1 P1	−0.81ppm	PE [36:1]	2.37E+00	3.2E-02	5.94E-01	1.8E-01
756.55509	C42 H79 O8 N1 P1	0.28ppm	PE [37:2]	4.25E-02	7.3E-03	1.93E-02	1.4E-03
768.55512	C43 H79 O8 N1 P1	0.32ppm	PE [38:3]	6.89E-02	9.4E-03	2.04E-02	1.0E-02
770.57088	C43 H81 O8 N1 P1	0.45ppm	PE [38:2]	2.51E-01	1.9E-02	5.35E-02	2.0E-02
772.58652	C43 H83 O8 N1 P1	0.44ppm	PE [38:1]	1.02E-01	7.6E-03	7.05E-02	2.4E-02
			Total-PE	2.39E+02	1.2E+01	4.47E+01	1.4E+01
Phosphatidylcholine							
790.5606	C42 H81 O10 N1 P1	0.31ppm	PC [32:1]	1.15E+01	8.4E-01	2.34E+00	5.8E-01
800.5451	C43 H79 O10 N1 P1	0.51ppm	PC [33:3]	6.91E-01	6.9E-02	2.37E-01	1.6E-02
802.5608	C43 H81 O10 N1 P1	0.58ppm	PC [33:2]	1.44E+00	5.5E-02	3.08E-01	3.1E-02
804.5764	C43 H83 O10 N1 P1	0.47ppm	PC [33:1]	6.62E-01	4.9E-02	1.87E-01	2.3E-02
812.5452	C44 H79 O10 N1 P1	0.55ppm	PC [34:4]	1.71E+00	1.7E-01	4.32E-01	3.3E-02
814.561	C44 H81 O10 N1 P1	0.79ppm	PC [34:3]	2.41E+01	1.9E+00	6.00E+00	1.2E+00

816.5765	C44 H83 O10 N1 P1	0.60ppm	PC [34:2]	4.76E+01	2.9E+00	1.19E+01	3.7E+00
818.5914	C44 H85 O10 N1 P1	−0.34ppm	PC [34:1]	8.81E+00	4.6E-01	2.09E+00	5.9E-01
830.5922	C45 H85 O10 N1 P1	0.69ppm	PC [35:2]	6.17E-01	5.4E-02	1.56E-01	3.0E-02
840.5765	C46 H83 O10 N1 P1	0.61ppm	PC [36:4]	1.86E+01	1.8E+00	4.96E+00	9.0E-01
842.592	C46 H85 O10 N1 P1	0.46ppm	PC [36:3]	1.53E+01	9.8E-01	3.20E+00	7.2E-01
844.6075	C46 H87 O10 N1 P1	0.20ppm	PC [36:2]	2.83E+00	1.2E-01	5.47E-01	2.3E-01
			Total-PC	1.35E+02	9.0E+00	2.95E+01	7.9E+00
Phosphatidylinositol							
777.4563	C39 H70 O13 P1	0.43ppm	PI [30:2]	4.97E-01	4.1E-02	1.08E-01	2.9E-02
779.4719	C39 H72 O13 P1	0.43ppm	PI [30:1]	6.07E-01	2.1E-02	2.23E-01	8.0E-02
803.472	C41 H72 O13 P1	0.53ppm	PI [32:3]	6.17E-01	4.3E-02	1.51E-01	3.0E-02
805.4877	C41 H74 O13 P1	0.55ppm	PI [32:2]	8.39E+00	4.7E-01	1.60E+00	2.9E-01
807.5033	C41 H76 O13 P1	0.45ppm	PI [32:1]	3.47E+00	4.2E-01	1.48E+00	8.2E-02
819.5034	C42 H76 O13 P1	0.62ppm	PI [33:2]	5.02E-01	6.1E-02	1.09E-01	2.5E-02
821.519	C42 H78 O13 P1	0.55ppm	PI [33:1]	1.40E-01	2.8E-02	8.15E-02	9.2E-03
829.4878	C43 H74 O13 P1	0.69ppm	PI [34:4]	7.66E-01	2.4E-02	1.77E-01	3.4E-02

831.5034	C43 H76 O13 P1	0.62ppm	PI [34:3]	1.37E+01	6.7E-01	2.66E+00	7.5E-01
833.5188	C43 H78 O13 P1	0.25ppm	PI [34:2]	4.88E+01	2.1E+00	8.80E+00	4.0E+00
845.519	C44 H78 O13 P1	0.55ppm	PI [35:3]	2.55E-01	8.5E-03	9.45E-02	1.4E-02
847.5347	C44 H80 O13 P1	0.54ppm	PI [35:2]	5.79E-01	5.8E-02	1.74E-01	3.4E-02
855.5035	C45 H76 O13 P1	0.65ppm	PI [36:5]	9.82E-01	4.6E-02	2.45E-01	4.8E-02
857.519	C45 H78 O13 P1	0.50ppm	PI [36:4]	1.26E+01	5.0E-01	2.89E+00	6.4E-01
859.5344	C45 H80 O13 P1	0.27ppm	PI [36:3]	2.28E+01	1.2E+00	3.52E+00	1.2E+00
861.5499	C45 H82 O13 P1	−0.00ppm	PI [36:2]	6.16E+00	4.1E-01	1.37E+00	2.0E-01
889.5817	C47 H86 O13 P1	0.57ppm	PI [38:2]	7.17E-02	1.6E-02	2.30E-02	1.6E-03
			Total-PI	1.21E+02	5.5E+00	2.16E+01	6.2E+00
Phosphatidylserine							
730.4661	C38 H69 O10 N1 P1	−0.52ppm	PS [32:2]	6.67E-01	6.1E-02	1.58E-01	2.8E-02
732.4818	C38 H71 O10 N1 P1	−0.43ppm	PS [32:1]	1.73E+00	1.6E-01	3.80E-01	9.3E-02
734.4976	C38 H73 O10 N1 P1	−0.28ppm	PS [32:0]	3.41E-01	2.0E-03	1.27E-01	1.6E-02
758.4979	C40 H73 O10 N1 P1	0.14ppm	PS [34:2]	1.36E+01	1.2E+00	3.00E+00	5.0E-01
760.5134	C40 H75 O10 N1 P1	0.01ppm	PS [34:1]	1.19E+01	1.2E+00	2.70E+00	4.2E-01

774.5302	C41 H77 O10 N1 P1	1.44ppm	PS [35:1]	4.96E-01	5.9E-02	2.63E-01	3.2E-02
782.4982	C42 H73 O10 N1 P1	0.53ppm	PS [36:4]	8.73E+00	8.0E-01	1.90E+00	2.6E-01
786.5292	C42 H77 O10 N1 P1	0.14ppm	PS [36:2]	5.61E+01	4.8E+00	1.32E+01	2.3E+00
788.5448	C42 H79 O10 N1 P1	0.17ppm	PS [36:1]	2.95E+01	1.4E+00	8.00E+00	6.0E-01
			Total-PS	1.23E+02	8.7E+00	2.92E+01	4.2E+00
Ceramides							
568.4941	C34 H66 O5 N1	−0.89ppm	Cer [32:1]	1.16E-01	2.9E-03	2.40E-02	6.4E-03
594.5102	C36 H68 O5 N1	−0.21ppm	Cer [34:2]	1.17E-01	8.0E-03	5.33E-02	2.7E-03
596.526	C36 H70 O5 N1	0.02ppm	Cer [34:1]	1.35E+00	9.0E-02	3.57E-01	1.9E-02
622.5415	C38 H72 O5 N1	−0.10ppm	Cer [36:2]	1.50E-01	1.7E-02	5.43E-02	1.1E-02
624.5572	C38 H74 O5 N1	−0.03ppm	Cer [36:1]	1.23E+00	1.4E-01	2.80E-01	4.9E-02
650.5727	C40 H76 O5 N1	−0.23ppm	Cer [38:2]	4.33E-02	1.3E-03	1.46E-02	6.9E-03
652.5883	C40 H78 O5 N1	−0.37ppm	Cer [38:1]	1.03E-01	1.5E-02	2.43E-02	2.6E-04
			Total-Cer	3.18E+00	2.0E-01	7.78E-01	8.0E-02
Phosphatidylethanolamine-Ceramide							
629.4661	C34 H66 O6 N2 P1	−0.46ppm	CerPE [32:2]	3.96E-01	2.1E-02	9.79E-02	1.5E-02

631.4818	C34 H68 O6 N2 P1	−0.36ppm	CerPE [32:1]	3.13E+00	5.3E-02	6.47E-01	2.5E-01
645.4976	C35 H70 O6 N2 P1	−0.17ppm	CerPE [33:1]	4.02E-02	1.6E-03	2.12E-02	6.3E-03
657.4975	C36 H70 O6 N2 P1	−0.36ppm	CerPE [34:2]	1.45E+00	8.9E-02	4.70E-01	1.5E-02
659.5132	C36 H72 O6 N2 P1	−0.23ppm	CerPE [34:1]	1.38E+01	5.8E-01	2.53E+00	1.7E+00
661.5279	C36 H74 O6 N2 P1	−1.72ppm	CerPE [34:0]	4.24E-02	2.5E-03	2.11E-02	6.4E-03
673.5288	C37 H74 O6 N2 P1	−0.25ppm	CerPE [35:1]	1.21E-01	8.7E-03	1.58E-01	6.8E-03
685.529	C38 H74 O6 N2 P1	−0.03ppm	CerPE [36:2]	1.17E+00	6.8E-02	3.85E-01	2.8E-02
687.5446	C38 H76 O6 N2 P1	−0.02ppm	CerPE [36:1]	9.39E+00	6.5E-01	1.76E+00	8.4E-01
701.5601	C39 H78 O6 N2 P1	−0.31ppm	CerPE [37:1]	1.03E-01	4.7E-03	1.28E-01	7.9E-03
713.5601	C40 H78 O6 N2 P1	−0.24ppm	CerPE [38:2]	2.50E-01	1.2E-02	4.70E-02	1.9E-02
715.5748	C40 H80 O6 N2 P1	−1.61ppm	CerPE [38:1]	4.85E-01	2.6E-02	9.55E-02	6.8E-02
			Total-CerPE	3.05E+01	1.3E+00	6.04E+00	2.7E+00

Supplementary Table 2. Internal standard mixture for Shotgun lipidomics experiments

Sl.No	Lipid Standard	Concentration (µM)
1.	C12 Sphingosyl PE (d17:1)	3.982E+00
2.	PC 31:1 (17:0/14:1)	2.214E+00
3.	PI 31:1 (17:0/14:1)	1.862E+00
4.	PE 31:1 (17:1/14:0)	2.141E+00
5.	1,2,3-Triheptad TAG (17:0)	3.109E+00
6.	C17 Ceramide (d18:1/17:0)	5.205E+00
7.	16:0 Diether PE	3.578E+00
8.	PS (17:0/14:1)	1.473E+00

Supplementary Table 3. Gene specific primers used for quantitative RT-PCR analysis

Gene	**CG number**	**Forward Primer (5′)**	**Reverse Primer (3′)**
rp49	*CG7939*	CGGATCGATATGCTAAGCTGT	GCGCTTGTTCGATCCGTA
Gastric Lipases	*CG31089*	GCACTAATGTCTTGGATTCCCG	CACTTTCACACACTGGACGCA
	CG31091	CTGGATACGATGTTTGGCTGG	GTGCCTTGGGAGTGTCCTAT
	CG8093	AAAGACACGCCAGCAAGTCG	GGAGCGAGCAAATGAGCAGA
	CG6271	ACAAGCCCAACAAGCGTCTG	CTCGTAGTCTCCGCACTTCA
	CG5932	GCAGCACGGATTGTTCAGTAA	CTGTTCAGCGAGATGATGATG
	CG17192	GCTGGTAAGCAAGTTGGGCA	CATCCTGGTTGTTTCCGTCC
	CG6295	AACCCTGGGATTCCTGAAGC	ATGTAGGCATTGGTGGTGGC
	CG6283	GGTGGCAAGGTTGGTGAGAT	CATCGGTGGATAGACGCTTAG