

Supporting Information

Table S1 List of major GLs identified in PC 12 cell line based on accurate MS data.

No.	<i>t</i> R (min)	Selected ion	Exact <i>m/z</i>	Error (ppm)	Formula	Tentatively assignment of GLs
1	2.21	[M+H] ⁺	496.3430	5.4	C24H50NO7P	LPC 16:0 or PAF 14:0
2^a	2.95	[M+H]⁺	524.3735	3.6	C26H54NO7P	LPC 18:0 or PAF 16:0
3	5.44	[M+H] ⁺	780.5538	0.6	C44H78NO8P	PC 36:5
4	5.79	[M+H] ⁺	730.5393	0.8	C40H76NO8P	PC 32:2
5	5.87	[M+H] ⁺	756.5548	0.7	C42H78NO8P	PC 34:3
6	5.98	[M+H] ⁺	780.5552	1.2	C44H78NO8P	PC 36:5
7	6.03	[M+H] ⁺	806.5736	4.5	C46H80NO8P	PC 38:6
8	6.06	[M+H] ⁺	782.5717	2.2	C44H80NO8P	PC 36:4
9	6.08	[M+H] ⁺	756.5551	1.1	C42H78NO8P	PC 34:3
10	6.13	[M+H] ⁺	782.5725	3.2	C44H80NO8P	PC 36:4
11	6.24	[M+H] ⁺	808.5906	6.2	C46H82NO8P	PC 38:5
12	6.58	[M+H] ⁺	732.5553	1.4	C40H79NO8P	PC 32:1
13	6.64	[M+H] ⁺	782.5697	0.4	C44H80NO8P	PC 36:4
14	6.68	[M+H] ⁺	808.5894	4.7	C46H82NO8P	PC 38:5
15^a	6.81	[M+H]⁺	758.5706	0.8	C42H80NO8P	PC 34:2
16^a	6.85	[M+H]⁺	784.5880	3.1	C44H82NO8P	PC 36:3
17	6.93	[M+H] ⁺	766.5416	3.8	C43H76NO8P	PC 35:5
18	7.00	[M+H] ⁺	810.6063	6.2	C46H84NO8P	PC 38:4
19	7.01	[M+H] ⁺	784.5884	3.6	C44H82NO8P	PC 36:3
20	7.01	[M+H] ⁺	808.5887	3.8	C46H82NO8P	PC 38:5
21	7.06	[M+H] ⁺	720.5536	1.0	C39H78NO8P	PC 31:0
22	7.11	[M+H] ⁺	746.5714	1.9	C41H80NO8P	PC 33:1
23	7.11	[M+H] ⁺	742.5399	1.6	C41H76NO8P	PC 33:3
24	7.20	[M+H] ⁺	792.5957	6.3	C46H82NO7P	PC P-38:5
25	7.28	[M+H] ⁺	766.5411	3.1	C43H76NO8P	PC 35:5

26	7.38	[M+H] ⁺	772.5833	3.0	C43H82NO8P	PC 35:2
27	7.38	[M+H] ⁺	794.6047	2.1	C46H84NO7P	PC P-38:4
28^a	7.68	[M+H]⁺	734.5703	0.4	C40H80NO8P	PC 32:0
29^a	7.73	[M+H]⁺	760.5875	2.5	C42H82NO8P	PC 34:1
30^a	7.77	[M+H]⁺	786.6024	1.4	C44H84NO8P	PC 36:2
31	7.78	[M+H] ⁺	810.6072	7.3	C46H84NO8P	PC 38:4
32	7.95	[M+H] ⁺	812.6221	6.4	C46H86NO8P	PC 38:3
33	8.00	[M+H] ⁺	786.6035	2.8	C44H84NO8P	PC 36:2
34	8.08	[M+H] ⁺	768.5583	5.2	C43H78NO8P	PC 35:4
35	8.30	[M+H] ⁺	744.5582	5.2	C41H78NO8P	PC 33:2
36	8.38	[M+H] ⁺	774.6017	0.5	C43H84NO8P	PC 35:1
37	8.52	[M+H] ⁺	746.6078	1.9	C42H84NO7P	PC P-34:0
38	8.53	[M+H] ⁺	720.5913	0.8	C40H82NO7P	PC O-32:0
39	9.02	[M+H] ⁺	762.6049	4.7	C42H84NO8P	PC 34:0
40	9.07	[M+H] ⁺	788.6202	4.2	C44H86NO8P	PC 36:1
41	9.40	[M+H] ⁺	746.5697	0.4	C41H80NO8P	PC 33:1
42	16.97	[M+NH ₄] ⁺	894.7584	3.7	C57H96O6	TG 54:7
43	16.97	[M+NH ₄] ⁺	868.7424	3.5	C55H94O6	TG 52:6
44	17.27	[M+NH ₄] ⁺	894.7611	6.7	C57H96O6	TG 54:7
45	17.27	[M+NH ₄] ⁺	920.7721	1.5	C59H98O6	TG 56:8
46	17.33	[M+NH ₄] ⁺	818.7233	0.6	C51H92O6	TG 48:3
47	17.33	[M+NH ₄] ⁺	844.7440	5.4	C53H94O6	TG 50:4
48	17.40	[M+NH ₄] ⁺	896.7747	4.5	C57H98O6	TG 54:6
49	17.40	[M+NH ₄] ⁺	870.7600	5.6	C55H96O6	TG 52:5
50	17.60	[M+NH ₄] ⁺	922.7906	4.6	C59H100O6	TG 56:7
51	17.67	[M+NH ₄] ⁺	896.7764	6.4	C57H98O6	TG 54:6
52	17.69	[M+NH ₄] ⁺	846.7561	1.2	C53H96O6	TG 50:3
53	17.69	[M+NH ₄] ⁺	820.7408	1.7	C51H94O6	TG 48:2
54	17.70	[M+NH ₄] ⁺	794.7233	0.6	C49H92O6	TG 46:1

55^a	17.75	[M+NH₄]⁺	872.7747	4.6	C55H98O6	TG 52:4
56	17.75	[M+NH ₄] ⁺	898.7882	2.0	C57H100O6	TG 54:5
57	17.77	[M+NH ₄] ⁺	846.7589	4.5	C53H96O6	TG 50:3
58	17.82	[M+NH ₄] ⁺	782.7253	1.9	C48H92O6	TG 45:0
59	17.85	[M+NH ₄] ⁺	860.7710	0.3	C54H98O6	TG 51:3
60	17.87	[M+NH ₄] ⁺	834.7567	1.9	C52H96O6	TG 49:2
61	17.87	[M+NH ₄] ⁺	808.7419	3.1	C50H94O6	TG 47:1
62	17.90	[M+NH ₄] ⁺	924.8068	5.2	C59H102O6	TG 56:6
63	17.94	[M+NH ₄] ⁺	860.7703	0.5	C54H98O6	TG 51:3
64	18.00	[M+NH ₄] ⁺	796.7396	0.3	C49H94O6	TG 46:0
65	18.00	[M+NH ₄] ⁺	822.7567	1.9	C51H96O6	TG 48:1
66	18.02	[M+NH ₄] ⁺	848.7753	5.4	C53H98O6	TG 50:2
67^a	18.02	[M+NH₄]⁺	874.7883	2.2	C55H100O6	TG 52:3
68	18.06	[M+NH ₄] ⁺	900.8081	6.8	C57H102O6	TG 54:4
69	18.16	[M+NH ₄] ⁺	862.7902	4.4	C54H100O6	TG 51:2
70	18.21	[M+NH ₄] ⁺	926.8167	1.1	C59H104O6	TG 48:0
71^a	18.26	[M+NH₄]⁺	876.8086	7.5	C55H102O6	TG 52:2
72^a	18.27	[M+NH₄]⁺	850.7881	2.0	C53H100O6	TG 50:1
73	18.27	[M+NH ₄] ⁺	902.8186	1.0	C57H104O6	TG 54:3
74	18.29	[M+NH ₄] ⁺	824.7712	0.6	C51H98O6	TG 48:0
75	18.31	[M+NH ₄] ⁺	928.8331	0.2	C59H106O6	TG 56:4
76	18.37	[M+NH ₄] ⁺	864.8032	1.4	C54H102O6	TG 51:1
77	18.37	[M+NH ₄] ⁺	890.8174	0.3	C56H104O6	TG 53:2
78	18.39	[M+NH ₄] ⁺	834.7596	5.4	C52H96O6	TG 49:2
79	18.46	[M+NH ₄] ⁺	930.8464	2.8	C59H108O6	TG 56:3
80	18.46	[M+NH ₄] ⁺	904.8333	0.2	C57H106O6	TG 54:2
81	18.47	[M+NH ₄] ⁺	878.8177	1.7	C55H104O6	TG 52:1
82	18.66	[M+NH ₄] ⁺	906.8462	3.1	C57H108O6	TG 54:1
83	18.67	[M+NH ₄] ⁺	880.8357	2.7	C55H106O6	TG 52:0

^a GLs screened as potential biomarkers shown in Table 1.

Table S2 Accurate MS/MS data of AA-containing GLs and corresponding LPCs.

No.	GLs	t_R (min)	$[M+H]^+$ (m/z)	Fragment ion (m/z)	Peak intensity ($\times e^3$) ^a		
					Controls	A β -treated	A β + EGCG
1	LPC 16:0	2.21	496.3430	184.0728, 258.1104, 240.1009	0.35±0.04	0.81±0.08 ^b	0.57±0.06 ^c
2	LPC 18:0	2.95	524.3686	184.0726, 258.1088, 240.0991	3.03±0.36	5.68±1.67 ^b	2.45±0.60 ^c
3	PC 16:0/20:4	6.13	782.5725	184.0728, 496.3387, 544.3369, 478.3327, 526.3205	8.22±1.15	14.68±4.14 ^b	6.92±1.36 ^c
4	PC 18:0/20:4	7.00	810.6063	184.0735, 524.3734, 506.3529, 544.3324, 526.3269	0.74±0.12	1.26±0.20 ^b	1.04±0.11 ^c
5	Ratio of (LPC 16:0)/(PC16:0/20:4)				0.044±0.008	0.058±0.012 ^b	0.086±0.022 ^c
6	Ratio of (LPC 18:0)/(PC18:0/20:4)				4.12±0.41	4.53±1.51	2.38±0.60 ^c

^a Peak intensities were external scaled and normalized with cell numbers and the intensity of internal standard;

^b Student's *T*-test, $P < 0.05$, vs. control group;

^c Student's *T*-test, $P < 0.05$, vs. A β -treated group.

Fig. S1 Peak areas of eight randomly selected GLs at each cycle of extraction. Cellular GLs were firstly extracted according to the methods described in the manuscript. The upper layer phase was then re-extracted three times by using the solution prepared by combining water, methanol, chloroform, and sodium acetate in the volumetric ratio of 1:2.5:3.75:1 (see in Ref 25). Six parallel samples were prepared and analyzed.

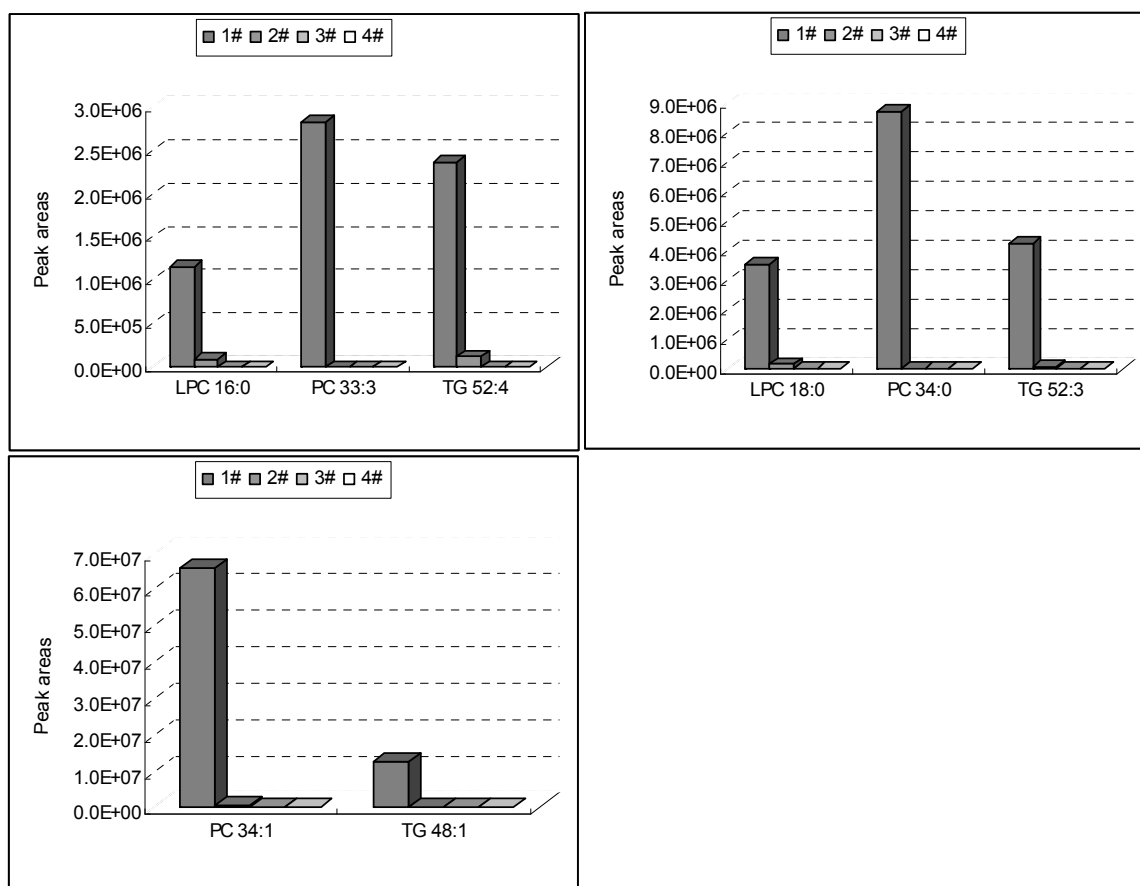


Fig. S2 Extract ion chromatograms of LPC 18:0 and PC 34:0 in 1# to 4# extracts.

