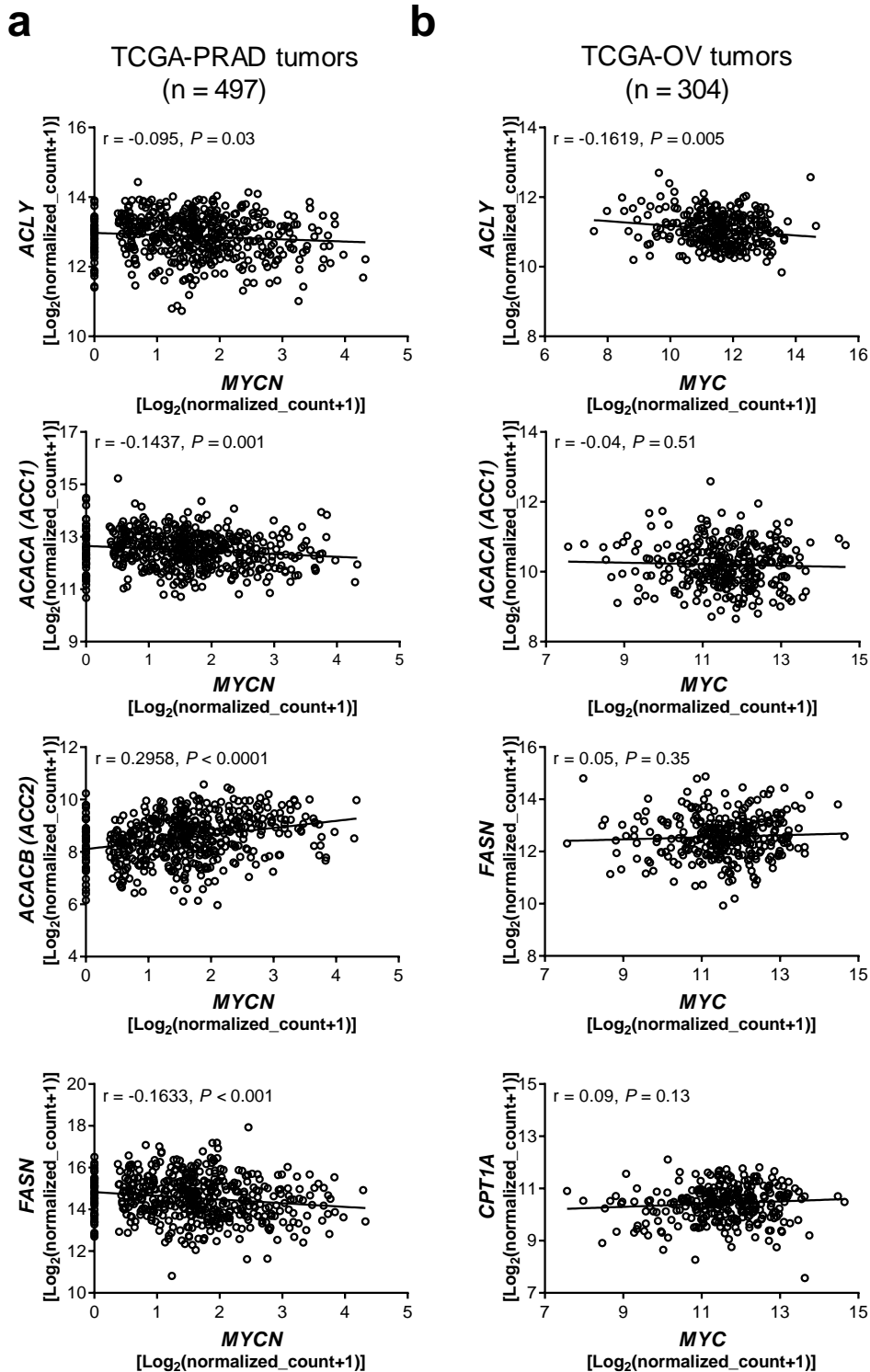


Supplementary Figure S1. Association of *MYCN* or *MYC* expression with that of key fatty acid synthesis genes in prostate and ovarian cancer TCGA. **(a)** Correlation of *MYCN* gene expression with that of key fatty acid synthesis genes in prostate cancer TCGA (n = 497). **(b)** Correlation of *MYC* gene expression with that of key fatty acid metabolism genes in ovarian cancer TCGA (n = 304). Pearson test was used to determine the correlation coefficient and statistical significance.



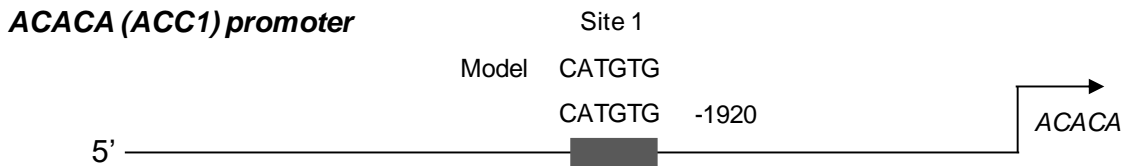
Supplementary Figure S2. Putative Myc consensus binding sequences at the promoters of *ACLY*, *ACCI1*, and *FASN*. The primers used for chromatin immunoprecipitation assay are also shown.



Primers (58°C, 30 s)

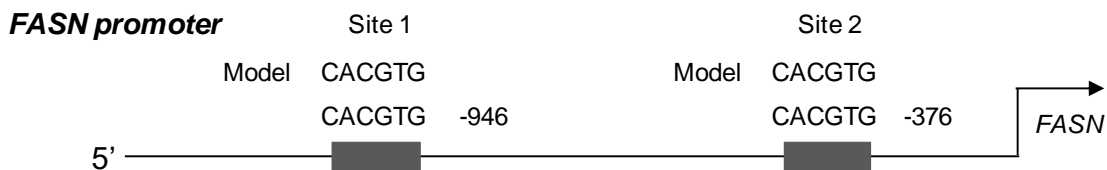
Site 1 – (F): 5'-TGACCTCGAACTCAGGTGAT-3'; (R): 5'-CAGATTGCTAGAGCCCAGAA-3'

Site 2 – (F): 5'-CCACACTGGGAAGTATGCTC-3'; (R): 5'-TTAGCCCAACTGGCTGTAAC-3'



Primer (56°C, 30 s)

Site 1 – (F): 5'-AGTTGGAGGTCTTCATACTACCTG-3'; (R): 5'-CTGTGAGAGACTGTTTTACATTGG-3'



Primers (62°C, 1 min)

Site 1 – (F): 5'-CACACCAGGTGGGTGTCC-3'; (R): 5'-GGAACCCAGACCCGAGAC-3'

Site 2 – (F): 5'-AGTGTGGCCCAAGCATTTC-3'; (R): 5'-GGGGCTGGGACTGAGGAG-3'

Supplementary Table S1. Details of patients whose specimens were used for immunohistochemistry of ACLY, ACC1, and c-Myc (data shown in Figure 5).

S. No.	Sample Type	Sample ID	Age	Race	Stage/Gleason score
1	Normal	PR092	50	White	N/A
2	Normal	GB01-6/D384	29	White	N/A
3	Normal	GB02-28/E460	16	White	N/A
4	Normal	GB75	44	White	N/A
5	Normal	PR114	17	White	N/A
1	PIN	G815	54	black	N/A
2	PIN	HB141	63	White	N/A
3	PIN	TP13-S0391	66	White	N/A
4	PIN	PR156	39	white	N/A
5	PIN	GB103	72	White	N/A
6	PIN	PBC-PR-2481	60	White	N/A
7	PIN	PBC-PR-2476	77	White	N/A
1	Adenocarcinoma	TP13-S0798	60	White	3+4=7
2	Adenocarcinoma	TP12-S0099	75	White	3+4=7
3	Adenocarcinoma	TP11-S1333	64	White	3+4=7
4	Adenocarcinoma	TP11-S1280	48	White	4+4=8
5	Adenocarcinoma	TP11-S0186	57	White	4+3=7
6	Adenocarcinoma	PBC-PR-2482	68	White	3+4=7
7	Adenocarcinoma	PBC-PR-2477	47	White	3+4=7
8	Adenocarcinoma	PBC-PR-2480	67	White	3+4=7
9	Adenocarcinoma	PBC-PR-2478	58	White	Unknown
10	Adenocarcinoma	PBC-PR-2479	70	White	3+4=7

PIN, prostatic intraepithelial neoplasia

Supplementary Table S2. Information on patients whose plasma specimens were used for measurement of individual fatty acids by targeted metabolomics.

S. No.	Sample Type	Sample ID	Age	Race	Stage/Gleason score
1	Normal	PR094	54	White	N/A
2	Normal	PR093	55	Hispanic	N/A
3	Normal	PR092	50	White	N/A
4	Normal	GB01-6/D384	29	White	N/A
5	Normal	GB02-28/E460	16	White	N/A
6	Normal	GB01-1	17	White	N/A
7	Normal	E242	25	Black	N/A
8	Normal	EB671	22	white	N/A
9	Normal	GB44	23	white	N/A
10	Normal	GB28	40	white	N/A
11	Normal	G007	51	Unknown	N/A
12	Normal	F441	17	white	N/A
13	Normal	PR106	43	white	N/A
14	Normal	GB75	44	White	N/A
15	Normal	FB499	39	White	N/A
16	Normal	B1091	18	White	N/A
17	Normal	B1120	13	White	N/A
18	Normal	B1055	16	White	N/A
19	Normal	PR113	32	White	N/A
20	Normal	PR114	17	White	N/A
1	PIN	G815	54	black	N/A
2	PIN	HB141	63	White	N/A
3	PIN	I331	56	White	N/A
4	PIN	IB570	77	White	N/A
5	PIN	JB026	69	White	N/A
6	PIN	JB110	69	White	N/A
7	PIN	JB290	46	White	N/A
8	PIN	JB878	63	White	N/A
9	PIN	GB572	48	White	N/A
10	PIN	TP09-S0656	58	White	N/A
11	PIN	TP13-S0391	66	White	N/A
12	PIN	F343	47	White	N/A
13	PIN	F173	50	White	N/A
14	PIN	E806	61	White	N/A
15	PIN	PR155	45	White	N/A
16	PIN	PR156	39	white	N/A
17	PIN	GB02-53	63	Unknown	N/A

18	PIN	PR235	57	White	N/A
19	PIN	PR157	63	Unknown	N/A
20	PIN	GB103	72	White	N/A
1	Adenocarcinoma	TP13-S0819	53	White	3+3=6
2	Adenocarcinoma	TP13-S0798	60	White	3+4=7
3	Adenocarcinoma	TP13-S0020	66	White	3+3=6
4	Adenocarcinoma	TP12-S0525	66	White	3+4=7
5	Adenocarcinoma	TP12-S0099	75	White	3+4=7
6	Adenocarcinoma	TP12-S0008	55	White	3+4=7
7	Adenocarcinoma	TP11-S1333	64	White	3+4=7
8	Adenocarcinoma	TP11-S1280	48	White	4+4=8
9	Adenocarcinoma	TP11-S1150	67	White	3+4=7
10	Adenocarcinoma	TP11-S0620	66	White	3+4=7
11	Adenocarcinoma	TP11-S0186	57	White	4+3=7
12	Adenocarcinoma	TP10-S0888	61	White	3+4=7
13	Adenocarcinoma	TP10-S0970	64	White	4+3=7
14	Adenocarcinoma	TP10-S0242	64	White	3+4=7
15	Adenocarcinoma	TP10-S0040	60	White	3+4=7
16	Adenocarcinoma	TP08-S0477	70	White	3+4=7
17	Adenocarcinoma	TP08-S0395	68	White	3+4=7
18	Adenocarcinoma	TP08-S0148	59	White	3+3=6

PIN, prostatic intraepithelial neoplasia; N/A, not applicable.

Supplementary Table S3. Human plasma fatty acid levels.

Metabolite	Relative amount to internal control (mean \pm SD)			<i>P</i> value
	Normal (n=20)	PIN (n=18)	Adenocarcinoma (ADC, n=18)	
Myristic acid	1.88 \pm 1.08	1.52 \pm 0.74	2.92 \pm 1.03	Normal vs. PIN (>0.99) Normal vs. ADC (<0.01) PIN vs. ADC (<0.001)
Palmitic acid	24.68 \pm 8.31	25.48 \pm 9.27	29.48 \pm 7.30	Normal vs. PIN (>0.99) Normal vs. ADC (0.11) PIN vs. ADC (0.38)
Palmitoleic acid	1.36 \pm 1.18	1.02 \pm 0.63	2.18 \pm 1.41	Normal vs. PIN (>0.99) Normal vs. ADC (0.04) PIN vs ADC (<0.01)
Stearic acid	2.99 \pm 0.89	4.12 \pm 1.14	3.86 \pm 0.79	Normal vs. PIN (<0.01) Normal vs. ADC (0.01) PIN vs. ADC (>0.99)
Oleic acid	4.91 \pm 3.52	5.07 \pm 3.82	8.96 \pm 3.41	Normal vs. PIN (>0.99) Normal vs. ADC (<0.01) PIN vs. ADC (<0.01)
Linoleic acid	2.65 \pm 1.61	2.94 \pm 2.25	5.54 \pm 2.36	Normal vs. PIN (>0.99) Normal vs. ADC (0.001) PIN vs. ADC (<0.01)
Linolenic acid	0.53 \pm 0.37	0.72 \pm 0.81	2.52 \pm 1.42	Normal vs. PIN (>0.99) Normal vs. ADC (<0.001) PIN vs. ADC (<0.001)
Dihomo- γ -linolenic acid	0.13 \pm 0.05	0.12 \pm 0.10	0.08 \pm 0.04	Normal vs. PIN (0.44) Normal vs. ADC (0.01) PIN vs. ADC (0.54)
Arachidonic acid	0.52 \pm 0.19	0.53 \pm 0.42	0.36 \pm 0.28	Normal vs. PIN (0.69) Normal vs. ADC (0.03) PIN vs. ADC (0.55)
Eicosapentaenoic acid	0.09 \pm 0.06	0.10 \pm 0.07	0.14 \pm 0.11	Normal vs. PIN (>0.99) Normal vs. ADC (0.66) PIN vs. ADC (0.73)
Docosapentaenoic acid	0.05 \pm 0.02	0.05 \pm 0.03	0.07 \pm 0.06	Normal vs. PIN (>0.99) Normal vs. ADC (0.34) PIN vs. ADC (0.53)
Docosahexaenoic acid	0.18 \pm 0.08	0.20 \pm 0.18	0.22 \pm 0.15	Normal vs. PIN (>0.99) Normal vs. ADC (>0.99) PIN vs. ADC (>0.99)
*SCD activity PLA/PA	0.05 \pm 0.04	0.04 \pm 0.02	0.07 \pm 0.03	Normal vs. PIN (0.73) Normal vs. ADC (0.09)

				PIN vs. ADC (<0.01)
*SCD activity OA/SA	1.62 ± 1.10	1.09 ± 0.64	2.30 ± 0.70	Normal vs. PIN (0.29) Normal vs. ADC (<0.05) PIN vs. ADC (<0.001)

Statistical significance was determined by one-way ANOVA followed by Kruskal-Wallis test.

*SCD = Stearoyl-CoA desaturase-1; SCD activity PLA/PA = SCD activity palmitoleic acid/palmitic acid; SCD activity OA/SA = SCD activity oleic acid/stearic acid