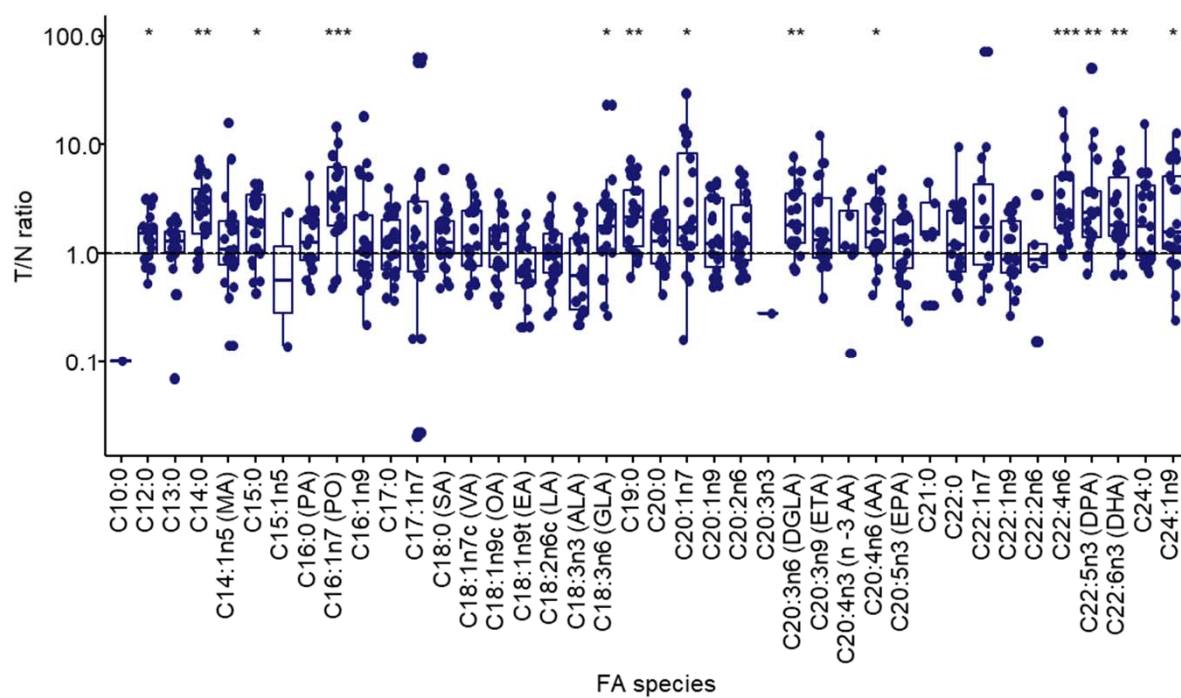
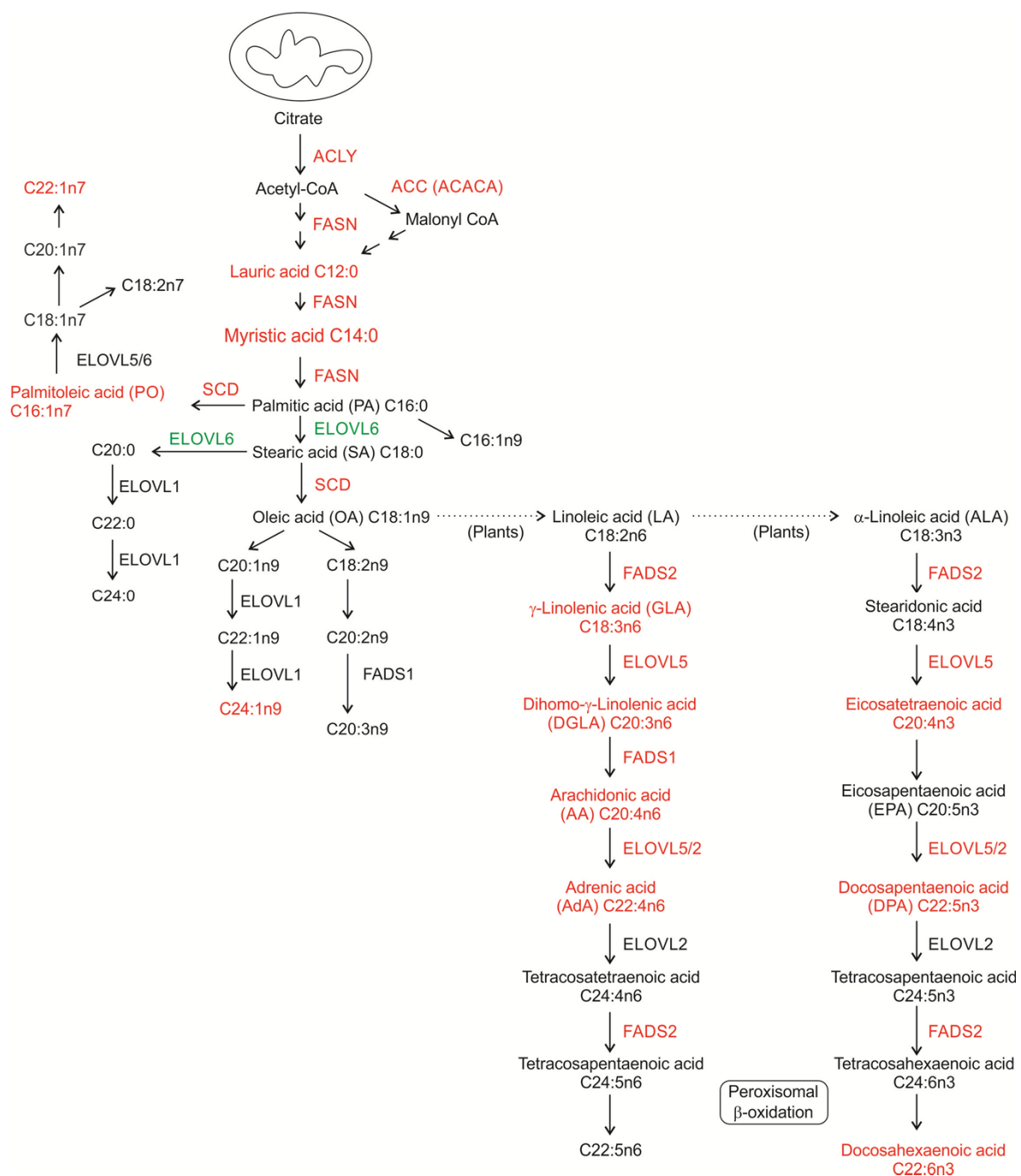


Supplementary Figure S1. Total amount of FAs and their particular classes detected in non-tumor (control) and tumor EpCAM+ cells were determined by GC/MS (n = 22). SFAs (saturated FAs), MUFAs (monounsaturated FAs), PUFAs (n-3, n-6 polyunsaturated FAs). Statistical significance (P-value) is indicated above each respective box plot pair.



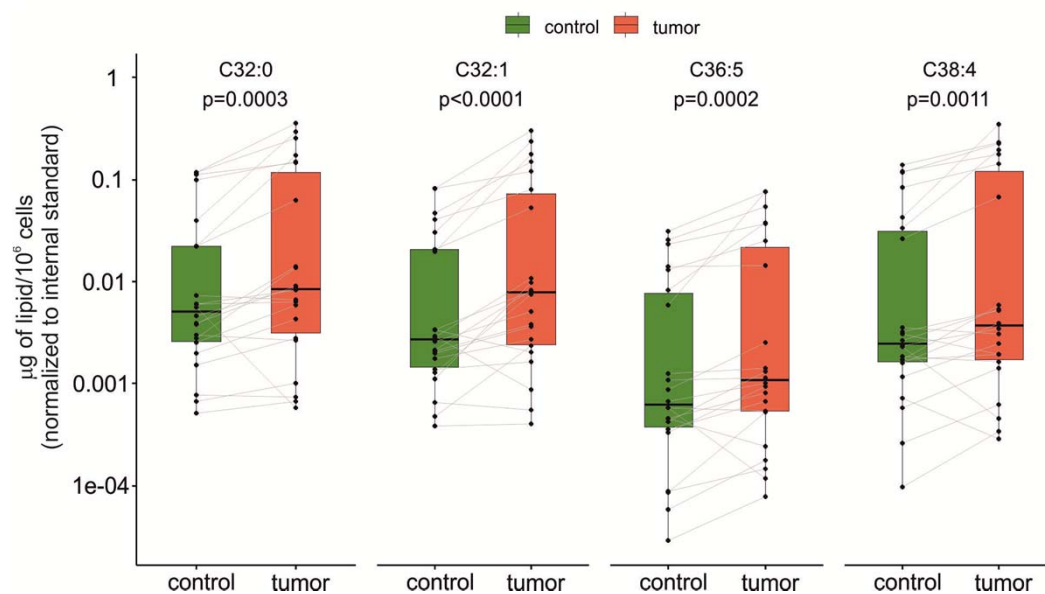
Supplementary Figure S2. Tumor/non-tumor (T/N) ratio of the amount of individual FAs detected in primary EpCAM⁺ cells (tumor and non-tumor) isolated from colon cancer patients. Statistical significance is indicated above each box plot: * $P < 0.01$, ** $P < 0.001$, *** $P < 0.0001$



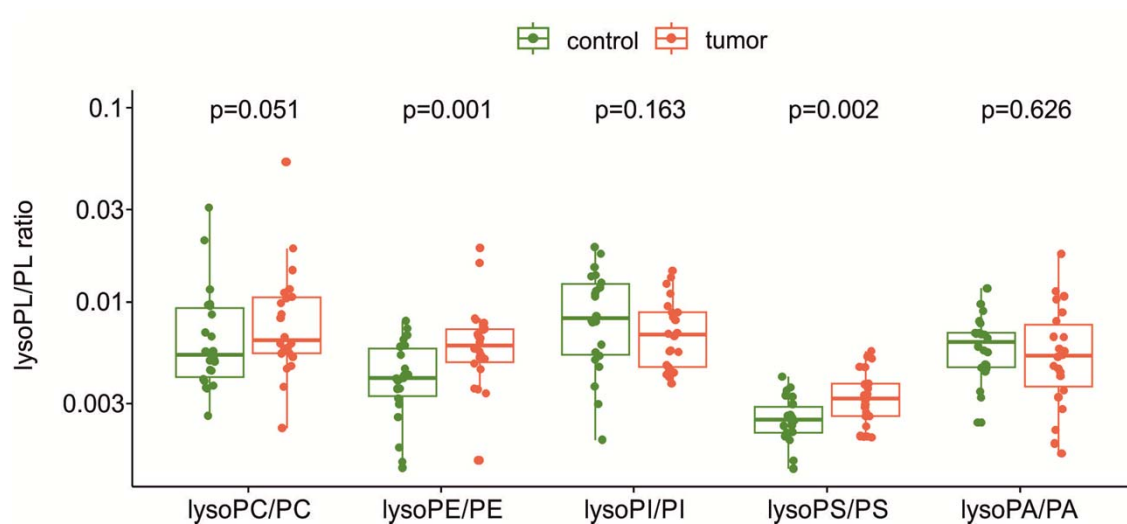
Supplementary Figure S3. A schematic presentation of FA metabolism. The scheme was prepared and modified according to Röhrig et Schultze, 2016 and Saini et Keum, 2018. Significantly up-regulated or down-regulated FAs and the genes encoding enzymes involved in FA synthesis, elongation and desaturation are indicated in red or green, respectively.

References:

- Röhrig, F., Schulze, A. The multifaceted roles of fatty acid synthesis in cancer. *Nat Rev Cancer* 16, 732–749 (2016).
- Saini, R.K., Keum, Y.-S. Omega-3 and omega-6 polyunsaturated fatty acids: Dietary sources, metabolism, and significance — A review. *Life Sci.* 203: 255-267 (2018).



Supplementary Figure S4. PC species significantly increased in tumor cells vs. non-tumor (control) EpCAM⁺ cells, determined by LC-MS/MS (n = 22). Values of PC content in non-tumor and corresponding tumor cells from the same patients are linked in pairwise graphs and the respective P-values are indicated above each pair of box plots, together with a number of C and double bonds.



Supplementary Figure S5. Comparison of the lysoPL/PL ratio of individual classes in non-tumor (control) and tumor EpCAM+ cells (n = 22). PC, (lyso)phosphatidylcholine; PE, (lyso)phosphatidylethanolamine; PI, (lyso)phosphatidylinositol; PS, (lyso)phosphatidylserine; PA, (lyso)phosphatidic acid. Statistical significance (P-values) is indicated above each pair of box plots

Supplementary Table S1. Description of patient cohort (n = 22).

Gender		
Male		15 (68.2%)
Female		7 (31.8%)
Age at diagnosis of CRC, years		
		67.6 (59.8 - 76.1)
BMI, kg/m2		
		25.1 (23 - 26.7)
<=25		11 (50%)
25-30		8 (36.4%)
>30		3 (13.6%)
Smoking status		
Current smoker		4 (18.2%)
Former smoker		2 (9.1%)
Non-smoker		16 (72.7%)
Alcohol use		
Regularly		1 (4.5%)
Occasionally		17 (77.3%)
Comorbidities		
Cardiovascular disease		11 (50%)
Respiratory disease		4 (18.2%)
Diabetes mellitus		4 (18.2%)
Personal history		
Adenomatous polyps		4 (18.2%)
CRC		0 (0%)
Non-specific intestinal inflammatory		1 (4.5%)
Other malignancy		4 (18.2%)
Family history		
Adenomatous polyps		0 (0%)
CRC		3 (13.6%)
Glucose level, mmol/L		
		5.3 (4.73 - 6.1)
Cholesterol level, mmol/L		
		4.73 (3.93 - 5.59)
HDL, mmol/L		
		1.09 (0.86 - 1.26)
LDL, mmol/L		
		2.94 (2.56 - 3.46)
TAGs, mmol/L		
		1.31 (1.14 - 1.56)
Albumin, g/L		
		36.65 (31.15 - 41.48)
Total protein, g/L		
		64.4 (58.27 - 71.7)
Location of colon		
Descending		4 (18.2%)
Sigmoideum		17 (77.3%)
NA's		1 (4.5%)
Grade		
G1		6 (27.3%)
G2		13 (59.1%)
G3		3 (13.6%)
Stage		
I		4 (18.2%)
IIA		8 (36.4%)
IIB		1 (4.5%)
IIIB		4 (18.2%)
IIIC		1 (4.5%)
IVA		2 (9.1%)
IVB		2 (9.1%)

Supplementary Table S2. List of analyzed FAs.

Shorthand designation	Abbreviation	Trivial Name	IUPAC Name
C12:0		Lauric acid	Dodecanoic acid
C13:0			Tridecanoic acid
C14:0		Myristic acid	Tetradecanoic acid
C14:1n5	MA	Myristoleic acid	<i>cis</i> -Tetradec-9-enoic acid
C15:0			Pentadecanoic acid
C15:1n5			<i>cis</i> -Pentadec-10-enoic acid
C16:0	PA	Palmitic acid	Hexadecanoic acid
C16:1n7	PO	Palmitoleic acid	<i>cis</i> -Hexadec-9-enoic acid
C16:1n9			<i>cis</i> -Hexadec-7-enoic acid
C17:0		Margaric acid	Heptadecanoic acid
C17:1n7			<i>cis</i> -Heptadec-10-enoic acid
C18:0	SA	Stearic acid	Octadecanoic acid
C18:1n7c	VA	Vaccenic acid	<i>cis</i> -Octadec-7-enoic acid
C18:1n9c	OA	Oleic acid	<i>cis</i> -Octadec-9-enoic acid
C18:1n9t		Elaidic acid	<i>trans</i> -Octadec-9-enoic acid
C18:2n6c	LA	Linoleic acid	<i>cis,cis</i> -Octadeca-9,12-dienoic acid
C18:3n6	GLA	γ -Linolenic acid	<i>all-cis</i> -Octadeca-6,9,12-trienoic acid
C18:3n3	ALA	α -Linolenic acid	<i>all-cis</i> -Octadeca-9,12,15-trienoic acid
C18:4n3	STD	Stearidonic acid	<i>all-cis</i> -Octadeca-6,9,12,15-tetraenoic acid
C19:0			Nonadecanoic acid
C20:0		Arachidic acid	Icosanoic acid
C20:1n7			<i>cis</i> -Icos-13-enoic acid
C20:1n9		Gadoleic Acid	<i>cis</i> -Icos-11-enoic acid
C20:2n6		Eicosadienoic acid	<i>cis,cis</i> -Icosa-11,14-dienoic acid
C20:3n6	DGLA	Dihomo- γ -Linolenic acid	<i>all-cis</i> -Icosa-8,11,14-trienoic acid
C20:3n3	ETE	Eicosatrienoic acid	<i>all-cis</i> -Icosa-11,14,17-trienoic acid
C20:3n9			<i>all-cis</i> -Icosa-5,8,11-trienoic acid
C20:4n6	AA	Arachidonic acid	<i>all-cis</i> -Icosa-5,8,11,14-tetraenoic acid
C20:4n3	ETA	w-3 Arachidonic acid	<i>all-cis</i> -Icosa-8,11,14,17-tetraenoic acid
C20:5n3	EPA	Eicosapentaenoic acid	<i>all-cis</i> -Icosa-5,8,11,14,17-pentaenoic acid
C21:0			Heneicosanoic acid
C22:0		Behenic acid	Docosanoic acid
C22:1n7			<i>cis</i> -Docos-15-enoic acid
C22:1n9		Erucic acid	<i>cis</i> -Docos-13-enoic acid
C22:2n6		Docosadienoic acid	<i>cis,cis</i> -Docosa-13,16-dienoic acid
C22:4n6	AdA	Adrenic Acid	<i>all-cis</i> -Docosa-7,10,13,16-tetraenoic acid
C22:5n3	DPA	Docosapentaenoic acid	<i>all-cis</i> -Docosa-7,10,13,16,19-pentaenoic acid
C22:6n3	DHA	Docosahexaenoic acid	<i>all-cis</i> -Docosa-4,7,10,13,16,19-hexaenoic acid
C24:0		Lignoceric acid	Tetracosanoic acid
C24:1n9		Nervonic acid	<i>cis</i> -Tetracos-15-enoic acid

Supplementary Table S3. List of genes evaluated in individual qPCR assays.

Real Time ready - Custom panel 96-24+ (Roche, ref.No.05582610001)

Gene	NCBI Entrez Gene ID
ACLY	47
ACACA	31
FASN	2194
SCD	6319
PPARG	5468
SREBF1	6720
SCAP	22937
NACC1	112939
CD36	948
PLIN2	123
IPO8*	10526

TaqMan™ Gene Expression Assay (FAM) (Thermo Fisher Scientific, cat. No. 4331182)

Gene	NCBI Entrez Gene ID	Assay ID
ELOVL1	64834	Hs00967955_g1
ELOVL2	54898	Hs00214936_m1
ELOVL5	60481	Hs01094711_m1
ELOVL6	79071	Hs00907564_m1
FADS2	9415	Hs00927433
IPO8*	10526	Hs00914057_m1

* reference gene