

Supplementary Table 1. Summary of significantly enriched GO annotations of PLODs related network

Description	Gene Count	Adjusted <i>P</i> -Value	Enriched Genes
<i>Biological Process</i>			
Extracellular matrix organization	31	6.70E-44	SOX9; COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL9A1; COL9A2; COL9A3; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL10A1; COL11A1; COL14A1; COL16A1; DCN; FBN1; ITGA1; ITGA11; ITGA2; ITGB1; ITGB3; LUM; SPARC
Collagen catabolic process	21	8.40E-35	ADAMTS2; ADAMTS3; COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL10A1; COL11A1; COL12A1; COL15A1; MMP2
Collagen fibril organization	16	2.90E-27	ADAMTS2; ADAMTS3; COL1A1; COL1A2; COL2A1; COL3A1; COL5A1; COL5A2; COL5A3; COL11A1; COL12A1; COL14A1; LUM; PLOD3; P4HA1; SERPINH1
Skeletal system development	11	6.20E-10	SOX9; BMP1; COL1A1; COL1A2; COL2A1; COL3A1; COL9A2; COL5A2; COL10A1; COL12A1; FBN1

Cellular response to amino acid stimulus	8	5.60E-09	COL1A1; COL1A2; COL3A1; COL4A1; COL5A2; COL6A1; COL16A1; MMP2
<i>Cellular Component</i>			
Endoplasmic reticulum lumen	32	2.70E-47	CRTAP; COLGALT1; COLGALT2; COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL9A1; COL9A2; COL9A3; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL10A1; COL11A1; COL12A1; COL14A1; COL15A1; COL16A1; PIIB; P4HA1; P4HA2; P4HA3; P4HB; SERPINH1
Collagen trimer	21	4.50E-32	COL1A1; COL1A2; COL2A1; COL3A1; COL9A2; COL5A1; COL5A2; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL10A1; COL11A1; COL12A1; COL14A1; COL15A1; MSR1; PCOLCE; P4HA1; SERPINH1
Extracellular matrix	23	6.80E-25	ADAMTS3; COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL12A1; COL14A1; COL15A1; DCN; FBN1; LUM; MMP2; PCOLCE; P4HB
Proteinaceous extracellular matrix	22	2.90E-24	ADAMTS2; ADAMTS3; BMP1; CRTAP; COL1A2; COL9A1;

			COL9A2; COL9A3; COL5A1; COL5A2; COL6A2; COL6A3; COL8A2; COL10A1; COL11A1; COL14A1; COL15A1; COL16A1; FBN1; LUM; MMP2; SPARC
Extracellular region	33	2.60E-20	ADAMTS2; ADAMTS3; BMP1; COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL9A1; COL9A2; COL9A3; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL7A1; COL8A2; COL10A1; COL11A1; COL12A1; COL14A1; COL15A1; COL16A1; DCN; FBN1; LUM; MMP2; PCOLCE2; P4HB; SPARC
<i>Molecular Function</i>			
Extracellular matrix structural constituent	15	5.60E-21	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL5A3; COL8A2; COL11A1; COL14A1; COL15A1; FBN1; LUM
Collagen binding	12	7.90E-16	COL5A3; COL14A1; DCN; ITGA1; ITGA11; ITGA2; LUM; PPIB; PCOLCE2; PCOLCE; SPARC; SERPINH1
Platelet-derived growth factor binding	7	7.30E-12	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL5A1; COL6A1
Extracellular matrix structural constituent conferring tensile strength	5	2.40E-08	COL2A1; COL9A1; COL9A2; COL9A3; COL12A1

L-ascorbic acid binding	6	6.90E-08	PLOD1; PLOD2; PLOD3; P4HA1; P4HA2; P4HA3
<i>KEGG Pathway</i>			
Protein digestion and absorption	21	2.90E-27	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL9A1; COL9A2; COL9A3; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL7A1; COL10A1; COL11A1; COL12A1; COL14A1; COL15A1
ECM-receptor interaction	18	7.80E-22	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL11A1; ITGA1; ITGA11; ITGA2; ITGB1; ITGB3
Focal adhesion	18	2.80E-15	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL11A1; ITGA1; ITGA11; ITGA2; ITGB1; ITGB3
PI3K-Akt signaling pathway	18	9.40E-12	COL1A1; COL1A2; COL2A1; COL3A1; COL4A1; COL4A2; COL5A1; COL5A2; COL5A3; COL6A1; COL6A2; COL6A3; COL11A1; ITGA1; ITGA11; ITGA2; ITGB1; ITGB3
Platelet activation	11	1.20E-08	COL1A1; COL1A2; COL2A1; COL3A1; COL5A1; COL5A2; COL5A3; COL11A1; ITGA2; ITGB1; ITGB3

Supplementary Table 2. Summary of genes correlated to PLODs in GC from TCGA database*

PLOD Protein	Correlated	Correlation	P-Value	Adj. P-Value
Genes	Gene	Coefficient		
PLOD1	SERPINH1	5.87E-01	1.01E-39	1.02E-35
PLOD1	LEPRE1	5.09E-01	1.14E-28	3.28E-25
PLOD1	LOXL2	5.07E-01	1.71E-28	4.32E-25
PLOD1	BMP1	5.58E-01	2.22E-35	1.50E-31
PLOD1	CD276	5.13E-01	3.39E-29	1.14E-25
PLOD1	SDF4	5.55E-01	6.13E-35	3.10E-31
PLOD1	AGTRAP	5.16E-01	1.32E-29	5.34E-26
PLOD2	LEPRE1	5.18E-01	7.67E-30	2.43E-27
PLOD2	CERCAM	5.25E-01	8.48E-31	3.18E-28
PLOD2	COL5A1	5.24E-01	1.16E-30	4.20E-28
PLOD2	COL5A2	5.86E-01	1.12E-39	4.52E-36
PLOD2	INHBA	5.36E-01	2.87E-32	1.82E-29
PLOD2	P4HA3	5.24E-01	1.15E-30	4.20E-28
PLOD2	COL1A2	5.46E-01	1.40E-33	1.24E-30
PLOD2	SPARC	5.29E-01	2.36E-31	9.94E-29
PLOD2	COL12A1	5.73E-01	1.43E-37	2.90E-34
PLOD2	CHSY3	5.56E-01	5.16E-35	6.29E-32
PLOD2	MFAP2	5.23E-01	1.45E-30	5.06E-28
PLOD2	CTHRC1	5.52E-01	2.05E-34	1.98E-31
PLOD2	NID2	5.08E-01	1.43E-28	3.61E-26
PLOD2	LOX	5.90E-01	2.82E-40	1.43E-36
PLOD2	COL3A1	5.56E-01	5.29E-35	6.29E-32
PLOD2	MMP2	5.13E-01	3.33E-29	9.10E-27
PLOD2	FN1	5.56E-01	4.47E-35	6.03E-32
PLOD2	VCAN	5.77E-01	3.70E-38	9.35E-35
PLOD2	NTM	5.36E-01	3.16E-32	1.88E-29

PLOD2	COL6A3	5.36E-01	2.98E-32	1.83E-29
PLOD2	TMEM45A	5.17E-01	1.07E-29	3.24E-27
PLOD2	FNDC1	5.30E-01	2.28E-31	9.80E-29
PLOD2	FAP	5.32E-01	1.08E-31	5.09E-29
PLOD2	EFEMP2	5.17E-01	8.80E-30	2.74E-27
PLOD2	NOX4	5.24E-01	1.22E-30	4.34E-28
PLOD2	PDPN	5.34E-01	6.06E-32	3.40E-29
PLOD2	SULF1	5.31E-01	1.51E-31	6.78E-29
PLOD2	MEIS3	5.04E-01	4.08E-28	1.01E-25
PLOD2	ANTXR1	5.94E-01	6.91E-41	4.66E-37
PLOD2	TIMP2	5.55E-01	7.91E-35	8.89E-32
PLOD2	GFPT2	5.44E-01	2.67E-33	2.07E-30
PLOD2	SRPX2	5.09E-01	8.74E-29	2.26E-26
PLOD2	CDH11	5.29E-01	2.59E-31	1.07E-28
PLOD2	FSTL1	5.97E-01	2.15E-41	2.17E-37
PLOD2	FBN1	5.19E-01	5.22E-30	1.68E-27
PLOD2	C14orf37	5.77E-01	3.50E-38	9.35E-35
PLOD2	CDH2	5.16E-01	1.25E-29	3.60E-27
PLOD2	GPX8	5.43E-01	3.57E-33	2.49E-30
PLOD2	VGLL3	5.72E-01	1.77E-37	3.26E-34
PLOD2	C13orf33	5.38E-01	1.92E-32	1.25E-29
PLOD2	LUM	5.62E-01	7.00E-36	1.01E-32
PLOD2	COPZ2	5.23E-01	1.68E-30	5.66E-28
PLOD2	THBS1	5.40E-01	9.57E-33	6.45E-30
PLOD2	RAB31	5.52E-01	2.03E-34	1.98E-31
PLOD2	SDC2	5.50E-01	3.57E-34	3.28E-31
PLOD2	PRKD1	5.66E-01	1.73E-36	2.70E-33
PLOD2	RAI14	5.45E-01	1.64E-33	1.37E-30
PLOD2	PDGFC	5.27E-01	5.16E-31	2.01E-28

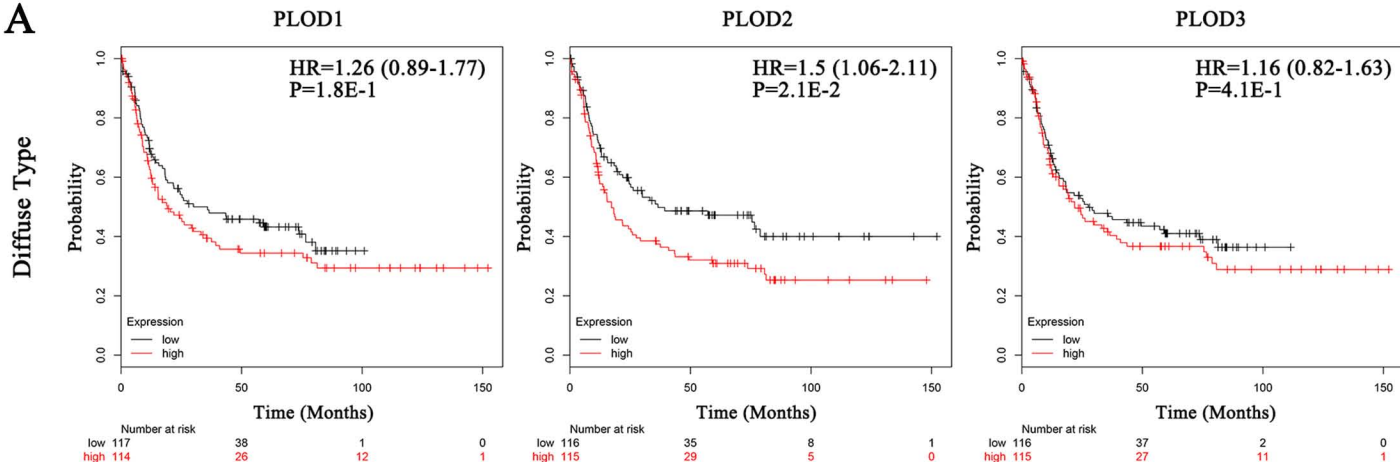
PLOD2	LRP12	5.76E-01	4.76E-38	1.07E-34
PLOD2	LARP6	5.04E-01	3.57E-28	8.91E-26
PLOD2	ST6GALNAC5	5.54E-01	1.04E-34	1.11E-31
PLOD2	SCHIP1	5.23E-01	1.58E-30	5.40E-28
PLOD2	FAM127C	5.71E-01	3.33E-37	5.61E-34
PLOD2	RGS4	5.01E-01	1.04E-27	2.44E-25
PLOD2	MYH10	5.23E-01	1.80E-30	5.97E-28
PLOD2	GLT8D2	5.35E-01	3.75E-32	2.17E-29
PLOD2	GXYLT2	5.14E-01	2.10E-29	5.89E-27
PLOD2	ROR2	5.30E-01	2.07E-31	9.09E-29
PLOD2	LAMA4	5.17E-01	9.28E-30	2.84E-27
PLOD2	TRO	5.10E-01	8.60E-29	2.26E-26
PLOD2	GPC6	5.33E-01	6.91E-32	3.73E-29
PLOD2	EDNRA	5.26E-01	6.47E-31	2.47E-28
PLOD2	C5orf13	5.17E-01	1.11E-29	3.29E-27
PLOD2	PTGER3	5.44E-01	2.86E-33	2.14E-30
PLOD2	SGCE	5.13E-01	3.16E-29	8.76E-27
PLOD2	FRMD6	5.21E-01	3.43E-30	1.12E-27
PLOD2	BEND6	5.31E-01	1.47E-31	6.77E-29
PLOD2	RASSF8	5.45E-01	1.70E-33	1.37E-30
PLOD2	PLSCR4	5.82E-01	5.09E-39	1.72E-35
PLOD2	FERMT2	5.32E-01	9.87E-32	4.95E-29
PLOD2	PALM2-AKAP2	5.28E-01	4.09E-31	1.62E-28
PLOD2	RNF217	5.02E-01	6.48E-28	1.54E-25
PLOD2	DSEL	5.15E-01	1.84E-29	5.24E-27
PLOD2	DZIP1	5.43E-01	3.30E-33	2.38E-30
PLOD2	MSRB3	5.04E-01	4.62E-28	1.13E-25
PLOD2	SGIP1	5.33E-01	7.01E-32	3.73E-29
PLOD2	PHLDB2	5.16E-01	1.23E-29	3.59E-27

PLOD2	DPYSL3	5.10E-01	6.70E-29	1.78E-26
PLOD2	ARMCX2	5.03E-01	5.19E-28	1.25E-25
PLOD2	GUCY1B3	5.13E-01	3.49E-29	9.41E-27
PLOD2	RECK	5.29E-01	3.12E-31	1.26E-28
PLOD2	FAM198B	5.32E-01	1.00E-31	4.95E-29
PLOD2	PKD2	5.33E-01	8.62E-32	4.47E-29
PLOD2	LRCH2	5.09E-01	8.83E-29	2.26E-26
PLOD2	TRPC1	5.32E-01	1.05E-31	5.08E-29
PLOD2	CSGALNACT2	5.00E-01	1.18E-27	2.75E-25
PLOD3	LRWD1	6.32E-01	9.91E-48	6.68E-44
PLOD3	SLC4A2	5.22E-01	2.26E-30	5.71E-27
PLOD3	GPR172A	5.26E-01	6.15E-31	1.78E-27
PLOD3	ZNHIT1	5.74E-01	1.01E-37	4.08E-34
PLOD3	AP1S1	6.62E-01	1.09E-53	1.10E-49
PLOD3	GNB2	5.51E-01	2.25E-34	7.59E-31
PLOD3	PTCD1	5.12E-01	4.48E-29	1.01E-25
PLOD3	SLC12A9	5.96E-01	2.66E-41	1.34E-37

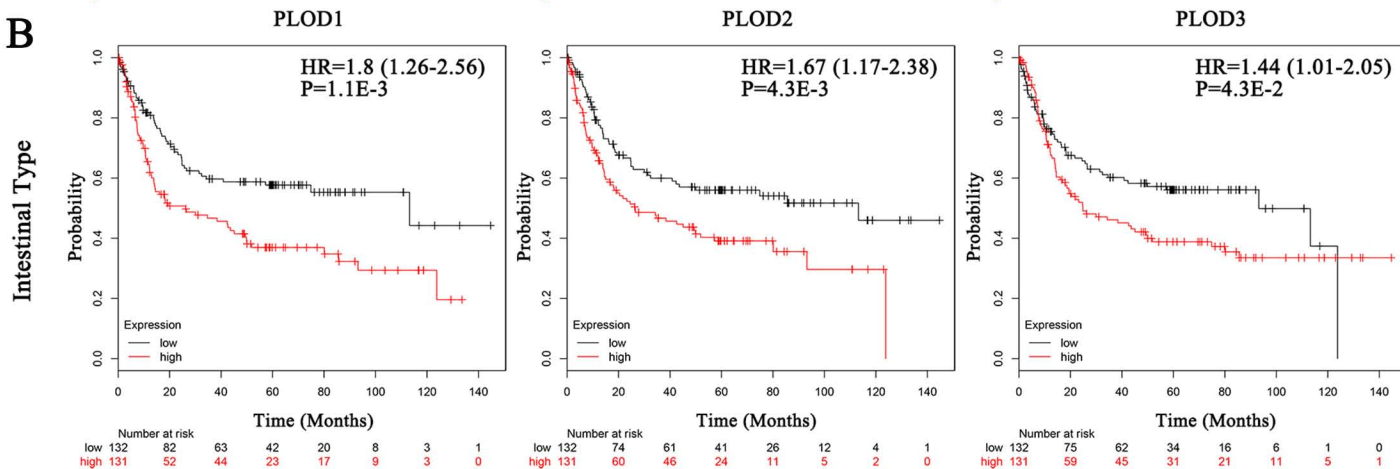
* Only genes with correlation coefficient > 0.5 are listed.

Supplementary Figure 1

A

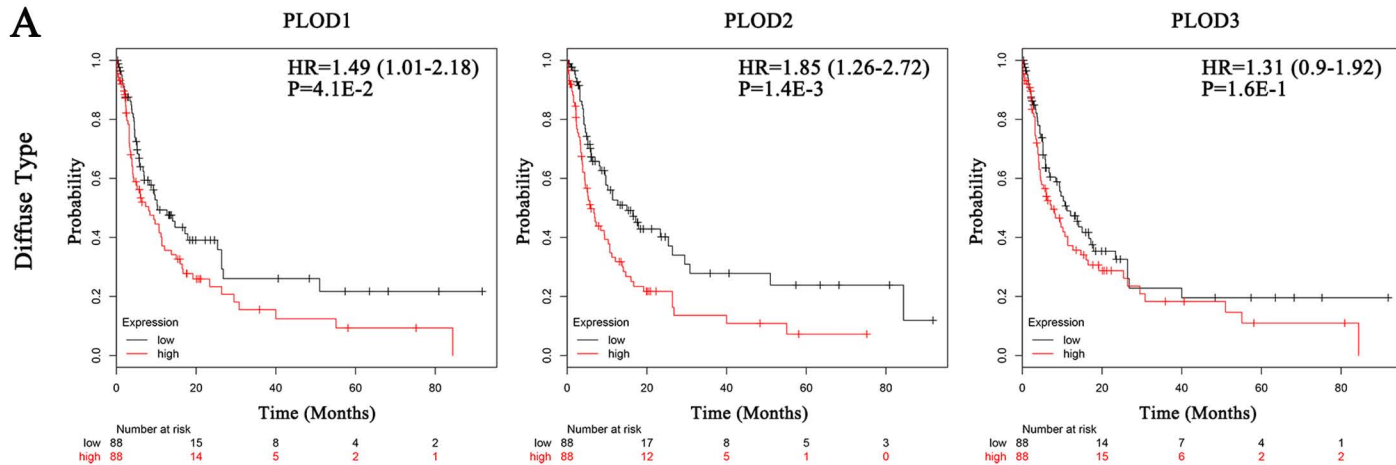


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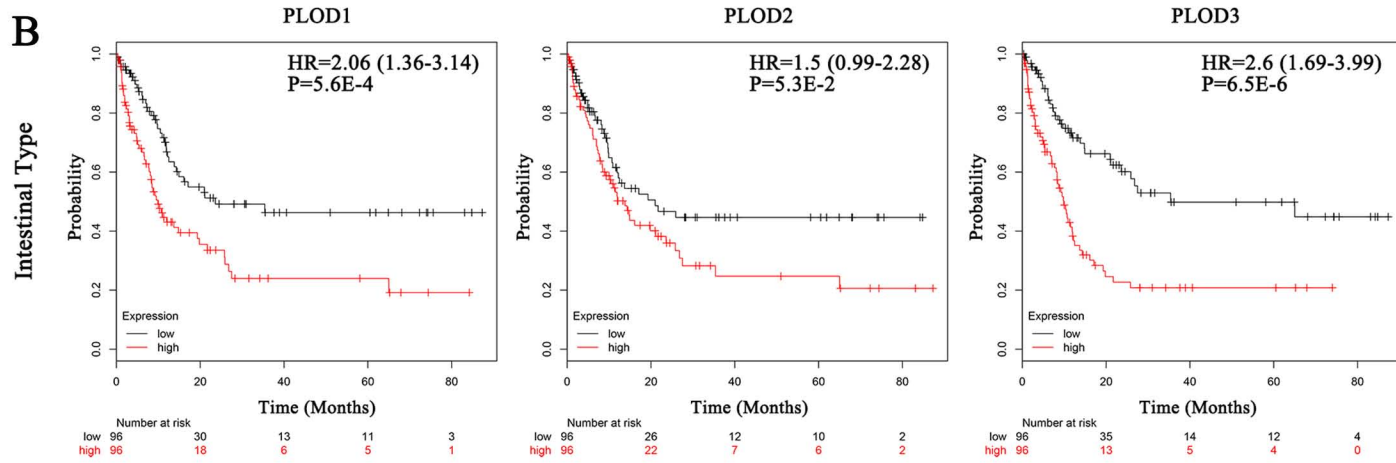


Supplementary Figure 2

A



B



Supplementary Figure 3

