

Supplement Table 1 Characteristics of patients with Colorectal cancer performed proteomics.

Variables	CRC (N = 52)
Sex, Male (%)	24 (46.2)
Age, years	64.6 ± 15.1
Tumor size, ≥5cm (%)	20 (38.5)
Gross Type, N (%)	
Fungating	12 (23.1)
Ulceroinfiltrative	35 (67.3)
Ulcerofungating	5 (9.6)
Differentiation, N (%)	
Poor	10 (19.2)
Moderate	38 (73.1)
Well	4 (7.7)
TNM stage, N (%)	
I	13 (25.00%)
II	23 (44.20%)
III	16 (30.80%)

Supplement Table 2 Proteins expression between CRC and adjacent tissues.

No	Protein	Tumor	Normal	P.adj	Fold.Change
1	KRIT1	29654.2479	0	1.23672E-10	-
2	CHEK1	172777.1206	0	0.000627948	-
3	PLSCR1	345023.4341	0	3.13792E-08	-
4	RIPK2	144762.6017	0	3.57567E-12	-
5	FOXO3	68477.27806	0	1.93225E-10	-
6	CRLF1	67663.19844	0	3.91834E-05	-
7	TNFRSF6B	319284.6693	0	0.001242149	-
8	BAG4	84455.46026	0	1.8736E-10	-
9	CHEK2	62707.27648	0	2.82817E-12	-
10	TGFB1	68112.063	0	5.30886E-06	-
11	TP53	86709.79586	0	2.83451E-06	-
12	JUN	84830.24115	0	1.10883E-07	-
13	SRGN	365173.4195	0	2.59835E-17	-
14	CDK4	36238.45995	0	5.40582E-10	-
15	ATF2	68666.94731	0	9.01149E-11	-
16	GJA1	94464.63212	0	0.001142845	-
17	CEBPB	197701.3915	0	3.81174E-18	-
18	RPS6KB1	82175.87214	0	4.04975E-10	-
19	CCN2	260789.3326	0	0.025592441	-
20	NOS3	37736.5098	0	1.58659E-08	-
21	HNF1B	111944.9203	0	1.07333E-14	-
22	CDKN2A	111009.9964	0	1.94274E-14	-
23	MAPK8	39881.07169	0	1.11746E-17	-
24	SOX9	245757.7303	0	4.49005E-16	-
25	MNAT1	232838.3942	0	1.87508E-15	-
26	HMGA2	59741.0075	0	0.005371511	-
27	PLK1	14160.13003	0	2.10713E-07	-
28	ATN1	40342.71031	0	9.90899E-08	-
29	UBE2B	254283.999	0	0.001634287	-
30	PLAUR	229670.9745	0	4.12787E-14	-
31	MCL1	36610.71476	0	3.1302E-13	-
32	FOXO1	46021.43439	0	1.16094E-06	-
33	BNIP2	97427.51646	0	7.08779E-13	-
34	MAD2L1	216147.0166	0	8.5986E-10	-
35	CLN3	25491.36733	0	9.70125E-05	-
36	BIRC2	80102.09193	0	9.84856E-08	-
37	C1D	125871.2182	0	7.98979E-11	-
38	THEM4	85431.73661	0	3.53828E-10	-
39	NAA16	54090.84798	0	2.56046E-08	-

40	TNFAIP8L2	66812.67854	0	8.57024E-08	-
41	SETX	27280.0211	0	3.66978E-17	-
42	DCUN1D3	90851.23162	0	2.42193E-16	-
43	ZC3H8	107545.7093	0	1.28032E-10	-
44	TNIP2	37724.87637	0	8.28116E-15	-
45	RHBDD1	112529.7311	0	2.17146E-12	-
46	CKAP2	126900.5997	0	5.12382E-09	-
47	RASSF5	26274.09064	0	1.84932E-08	-
48	APBB2	29633.38253	0	1.43296E-05	-
49	SIRT1	65817.35211	0	0.000601042	-
50	AURKB	19843.89287	0	1.9162E-08	-
51	NAA38	81576.29505	0	1.8513E-19	-
52	SHARPIN	56896.87645	0	6.47594E-09	-
53	FOXP1	81244.5506	0	1.43574E-08	-
54	CHD8	136158.0969	0	2.57103E-10	-
55	NLRP2	48752.18901	0	0.000423057	-
56	NOP53	151097.1735	0	3.07232E-12	-
57	SENP1	113887.6355	0	0.010812423	-
58	DDX20	207722.0876	0	5.35097E-19	-
59	IRS2	126502.6568	0	1.18701E-10	-
60	MAGED1	22906.68374	0	7.02186E-08	-
61	DPEP1	2240776.556	148170.4021	0.000131418	15.12297007
62	CEACAM5	22698205.04	3040121.038	0.011151957	7.466217549
No	Protein	Tumor	Normal	P.adj	Fold.Change
63	SULF1	153176.541	34539.40889	9.60404E-05	4.434833888
64	TIMP1	745638.4499	201043.3833	0.016441158	3.708843522
65	HSPH1	2279087.63	629726.6232	3.33039E-10	3.619169884
66	MX1	1209658.237	336493.3281	0.007993648	3.594895162
67	CDK1	454446.8087	127758.7616	1.10854E-07	3.557069613
68	RRP1B	223631.0505	65115.76579	2.85757E-08	3.434361061
69	AATF	150889.0592	46860.40333	9.01565E-06	3.219969281
70	RB1	254351.338	82369.62283	3.13714E-07	3.087926462
71	MPO	4273014.49	1409488.469	0.000654806	3.03160656
72	GATA6	432240.978	142962.5089	2.26947E-06	3.023456859
73	IGF1	670778.1426	222038.6193	0.000517404	3.02099763
74	LTF	6717389.841	2255705.557	0.000155303	2.977955089
75	AZU1	2863855.536	1014163.655	0.004995051	2.823859368
76	TRIM24	158724.0822	57312.2908	1.51376E-08	2.769459744
77	MNDA	762559.4775	284729.6791	1.702E-05	2.678187535
78	KIFAP3	133825.8574	50614.13455	5.0759E-06	2.644041206
79	LIG4	53001.80701	20469.98126	0.000137047	2.589245507

80	NPM1	33276233.69	13108164.19	6.34448E-10	2.53858841
81	PSME3	849015.8293	349468.8774	1.21047E-10	2.42944618
82	NOC2L	575579.1535	245068.7738	2.88576E-07	2.348643382
83	ID1	391213.0631	175078.5857	0.018813155	2.234499791
84	STAT1	2519426.982	1133986.661	2.07406E-06	2.221743049
85	HMGB1	15515982.13	7150761.957	6.39898E-13	2.169836196
86	GRK5	132815.7554	61414.1883	0.000650597	2.162623314
87	PPP1R13L	306412.2147	145893.5678	1.75599E-05	2.100244851
88	TOX3	290878.4261	144839.5887	7.97237E-06	2.008279841

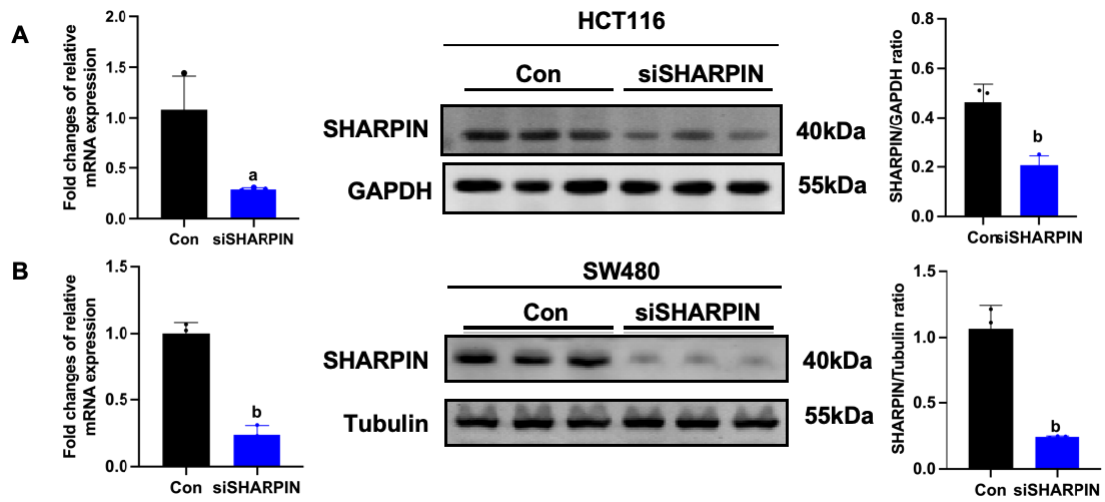
Supplement Table 3 Association between protein expression and TNM stage.

Proteins name	Protein expression, log <sub>2</sub> (TPM+1)				P value
	Total (n = 52)	I (n = 13)	II (n = 23)	III (n = 16)	
SHARPIN	15.7 (10.5, 16.2)	14.7 (0.0, 15.0)	15.8 (6.7, 16.4)	16.1 (15.7, 16.5)	0.005
TIMP1	18.7 (18.5, 19.4)	19.1 (18.7, 19.4)	18.5 (18.2, 18.8)	18.9 (18.6, 19.8)	0.015
NOC2L	19.0 (18.4, 19.6)	18.6 (18.5, 19.3)	18.9 (17.9, 19.2)	19.6 (19.0, 19.9)	0.022
LIG4	15.7 (0.0, 16.3)	15.1 (0.0, 16.1)	15.2 (0.0, 16.0)	16.4 (15.1, 16.7)	0.035
NOP53	17.1 (15.3, 17.9)	17.2 (16.2, 18.1)	16.5 (0.0, 17.2)	17.5 (16.9, 18.0)	0.053
BIRC2	15.9 (15.3, 16.7)	16.4 (16.1, 17.1)	15.9 (0.0, 16.6)	15.8 (15.3, 16.1)	0.055
TNFRSF6B	16.6 (0.0, 18.1)	16.5 (0.0, 19.0)	14.3 (0.0, 17.1)	17.3 (16.5, 18.2)	0.069
RB1	17.7 (17.0, 18.3)	17.6 (17.3, 18.1)	17.4 (16.6, 18.2)	18.0 (17.5, 18.9)	0.075
CLN3	13.5 (0.0, 14.9)	13.4 (0.0, 14.2)	0.0 (0.0, 14.6)	14.7 (13.3, 15.2)	0.081
CHEK2	15.9 (9.9, 16.7)	16.1 (15.4, 16.5)	15.2 (0.0, 16.1)	16.4 (14.9, 16.9)	0.092
HMGA2	12.6 (0.0, 15.6)	0.0 (0.0, 13.9)	0.0 (0.0, 15.8)	15.3 (10.2, 16.0)	0.104
NAA16	15.3 (10.3, 15.8)	15.3 (13.7, 15.7)	15.1 (0.0, 15.7)	15.7 (15.1, 16.7)	0.123
IGF1	19.1 (16.6, 19.9)	19.3 (17.0, 20.0)	17.6 (14.9, 19.5)	19.2 (18.9, 20.5)	0.124
MAD2L1	17.6 (16.2, 18.1)	16.7 (0.0, 17.4)	17.7 (7.6, 18.2)	17.7 (17.3, 18.1)	0.145
CDK1	18.6 (17.6, 19.3)	18.6 (17.4, 19.2)	18.4 (17.3, 18.9)	19.2 (18.4, 19.5)	0.149
HSPH1	20.8 (20.0, 21.6)	20.8 (20.0, 21.9)	20.4 (19.8, 21.4)	21.1 (20.5, 21.8)	0.156
SULF1	16.5 (15.0, 17.5)	15.9 (14.9, 17.9)	16.1 (15.0, 17.1)	17.2 (16.6, 17.7)	0.161
CDKN2A	16.6 (15.9, 17.2)	16.5 (16.1, 17.1)	16.9 (16.2, 17.3)	16.2 (14.9, 16.8)	0.176
NAA38	16.3 (15.9, 16.6)	16.1 (15.2, 16.3)	16.3 (16.0, 16.6)	16.6 (15.9, 16.7)	0.178
CHD8	17.1 (0.0, 17.8)	15.0 (0.0, 17.2)	17.5 (0.0, 17.9)	17.0 (15.8, 17.7)	0.181
DPEP1	20.1 (18.1, 21.4)	20.4 (18.9, 22.0)	19.5 (17.7, 20.8)	20.5 (18.1, 21.6)	0.199
STAT1	20.9 (20.2, 21.5)	20.9 (20.3, 21.3)	20.9 (20.2, 21.3)	21.2 (20.8, 22.1)	0.203
PLAUR	17.7 (16.7, 18.2)	17.5 (16.3, 17.9)	17.5 (16.6, 18.0)	18.1 (17.6, 18.4)	0.208
SRGN	18.5 (18.1, 18.9)	18.4 (17.4, 18.7)	18.3 (8.8, 18.9)	18.7 (18.3, 19.0)	0.209
CRLF1	15.0 (0.0, 16.3)	15.0 (14.7, 16.7)	14.5 (0.0, 15.6)	15.9 (0.0, 17.3)	0.213
AZU1	21.0 (19.4, 21.9)	21.1 (19.0, 22.4)	20.4 (19.1, 21.5)	21.8 (20.4, 22.0)	0.215
MCL1	15.2 (0.0, 16.0)	14.6 (0.0, 15.4)	15.5 (14.6, 16.0)	15.2 (0.0, 16.1)	0.216
MPO	21.6 (20.1, 22.5)	21.7 (20.0, 22.6)	21.4 (19.8, 21.9)	22.3 (21.0, 22.5)	0.217
TNFAIP8L2	15.6 (0.0, 16.7)	15.3 (0.0, 16.1)	15.8 (0.0, 16.6)	16.5 (6.9, 17.2)	0.219
PSME3	19.7 (18.9, 20.1)	19.5 (19.0, 20.0)	19.7 (18.7, 19.9)	20.0 (19.3, 20.3)	0.23
APBB2	13.4 (0.0, 15.4)	0.0 (0.0, 15.7)	0.0 (0.0, 14.9)	14.9 (13.2, 15.3)	0.231
MAPK8	15.4 (14.5, 15.7)	14.8 (14.0, 15.5)	15.4 (14.6, 15.6)	15.6 (15.2, 15.9)	0.233
RRP1B	17.5 (16.5, 18.3)	17.2 (16.7, 17.8)	17.3 (16.2, 18.0)	18.2 (17.3, 18.4)	0.233
MNAT1	17.8 (17.3, 18.2)	17.8 (17.5, 18.4)	17.6 (16.9, 18.0)	18.0 (17.4, 18.3)	0.247
CEACAM5	23.4 (22.3, 24.5)	23.5 (22.7, 23.9)	22.8 (22.1, 24.2)	23.8 (22.9, 25.0)	0.252
SETX	14.8 (13.8, 15.2)	14.4 (12.8, 15.2)	14.6 (13.8, 15.1)	14.9 (14.5, 15.3)	0.254
SOX9	17.9 (16.8, 18.5)	17.3 (16.8, 17.9)	17.8 (16.5, 18.6)	18.2 (17.8, 18.5)	0.258
HMGB1	23.7 (23.3, 24.2)	23.9 (23.5, 24.2)	23.5 (23.2, 24.1)	23.9 (23.5, 24.3)	0.258

AATF	16.7 (16.1, 17.9)	16.3 (16.1, 18.0)	16.5 (15.1, 17.2)	17.7 (16.5, 17.9)	0.266
GRK5	16.6 (15.9, 17.3)	17.1 (16.4, 17.6)	16.8 (15.9, 17.3)	16.0 (15.8, 17.0)	0.271
LTF	22.5 (20.6, 23.1)	22.6 (20.7, 23.1)	22.2 (20.1, 23.0)	23.0 (21.2, 23.4)	0.293
NPM1	24.8 (24.3, 25.2)	24.5 (24.1, 25.2)	24.7 (24.0, 25.1)	25.0 (24.5, 25.4)	0.298
THEM4	16.0 (10.7, 17.0)	16.7 (15.3, 17.0)	15.8 (0.0, 16.9)	16.2 (15.5, 16.8)	0.305
GJA1	14.5 (0.0, 16.8)	15.8 (0.0, 17.0)	0.0 (0.0, 15.7)	15.3 (0.0, 16.8)	0.31
IRS2	16.5 (15.0, 17.5)	15.9 (14.6, 17.5)	16.3 (14.7, 17.4)	16.9 (16.0, 18.1)	0.33
PLSCR1	17.7 (16.3, 18.8)	17.6 (16.3, 18.5)	17.7 (8.2, 18.4)	18.6 (17.2, 19.3)	0.332
MX1	18.4 (17.6, 20.1)	18.3 (17.6, 19.8)	18.4 (17.4, 19.1)	19.8 (17.5, 21.3)	0.338
MNDA	19.3 (18.4, 19.9)	19.3 (18.3, 19.8)	19.1 (18.3, 19.7)	19.7 (18.8, 20.0)	0.36
BAG4	16.0 (15.0, 16.5)	16.0 (14.9, 16.5)	15.7 (15.0, 16.5)	16.3 (15.8, 16.8)	0.362
FOXP1	16.1 (0.0, 17.0)	0.0 (0.0, 16.9)	16.6 (0.0, 17.1)	8.0 (0.0, 16.9)	0.375
NLRP2	6.0 (0.0, 15.8)	13.2 (0.0, 15.7)	0.0 (0.0, 15.0)	13.2 (0.0, 17.3)	0.381
UBE2B	17.0 (0.0, 18.0)	16.5 (0.0, 17.3)	16.4 (0.0, 18.1)	17.5 (15.0, 18.1)	0.387
FOXO1	15.3 (0.0, 16.1)	15.2 (0.0, 16.3)	14.9 (0.0, 15.9)	15.6 (0.0, 16.6)	0.388
DCUN1D3	16.5 (15.7, 16.9)	16.6 (16.0, 16.8)	16.4 (15.7, 16.8)	16.6 (16.0, 17.2)	0.398
CDK4	14.9 (0.0, 16.0)	14.2 (0.0, 16.0)	15.0 (0.0, 15.5)	15.2 (11.0, 16.1)	0.439
AURKB	13.5 (0.0, 15.2)	0.0 (0.0, 14.5)	13.7 (0.0, 15.1)	14.2 (9.6, 15.3)	0.446
RPS6KB1	16.3 (0.0, 17.1)	14.7 (0.0, 16.8)	16.1 (0.0, 17.1)	16.7 (0.0, 17.3)	0.467
ZC3H8	16.7 (0.0, 17.4)	16.0 (0.0, 17.1)	16.9 (7.4, 17.5)	16.2 (0.0, 17.2)	0.481
GATA6	18.6 (17.9, 19.2)	18.2 (17.8, 19.0)	18.7 (17.6, 19.1)	18.7 (18.3, 19.4)	0.484
PPP1R13L	18.1 (17.7, 18.5)	18.3 (17.9, 18.5)	18.1 (17.8, 18.4)	17.8 (17.4, 18.7)	0.51
PLK1	12.9 (0.0, 14.6)	12.3 (0.0, 13.9)	12.0 (0.0, 14.4)	13.3 (11.8, 14.7)	0.519
TRIM24	17.4 (16.6, 17.7)	17.2 (16.7, 17.6)	17.0 (16.6, 17.7)	17.6 (16.8, 17.7)	0.533
TP53	15.7 (0.0, 16.8)	15.5 (0.0, 16.4)	15.6 (0.0, 16.4)	16.3 (0.0, 17.7)	0.539
ATF2	15.8 (14.3, 16.6)	16.3 (14.8, 16.6)	15.1 (14.1, 16.4)	15.9 (11.7, 16.6)	0.575
CKAP2	16.8 (0.0, 17.8)	16.2 (0.0, 17.7)	0.0 (0.0, 17.9)	17.1 (12.0, 17.7)	0.579
TNIP2	15.1 (14.2, 15.8)	15.3 (14.6, 16.0)	15.0 (13.9, 15.6)	15.3 (14.6, 16.0)	0.584
BNIP2	16.3 (15.8, 16.9)	16.5 (15.7, 16.9)	16.2 (15.6, 16.8)	16.3 (16.2, 17.0)	0.586
TGFB1	15.4 (0.0, 16.5)	15.4 (0.0, 16.1)	15.4 (6.9, 15.9)	15.9 (9.6, 16.6)	0.606
NOS3	15.0 (8.6, 15.7)	15.1 (13.6, 15.6)	14.6 (0.0, 15.7)	15.3 (14.1, 15.8)	0.606
RASSF5	14.2 (0.0, 15.4)	14.1 (0.0, 14.7)	14.0 (0.0, 15.2)	14.3 (9.6, 15.8)	0.648
ATN1	15.1 (0.0, 15.8)	14.5 (0.0, 15.2)	15.2 (0.0, 15.8)	15.1 (12.8, 15.5)	0.662
RHBDD1	16.9 (14.7, 17.3)	16.7 (15.8, 17.3)	16.8 (14.2, 17.2)	16.9 (0.0, 17.5)	0.668
MAGED1	14.2 (0.0, 14.9)	14.3 (0.0, 14.7)	13.9 (0.0, 14.7)	14.2 (10.3, 15.4)	0.668
SENP1	15.2 (0.0, 16.4)	15.2 (0.0, 16.0)	15.4 (0.0, 16.5)	15.6 (0.0, 16.4)	0.686
DDX20	17.7 (17.0, 18.1)	17.6 (16.7, 18.1)	17.6 (17.0, 18.1)	17.8 (17.5, 18.1)	0.698
CCN2	16.0 (0.0, 17.9)	17.2 (0.0, 18.3)	0.0 (0.0, 17.8)	16.5 (0.0, 17.8)	0.718
RIPK2	17.2 (14.4, 17.7)	17.6 (15.9, 17.7)	16.7 (15.0, 17.9)	17.2 (13.2, 17.7)	0.737
KRIT1	15.0 (0.0, 15.6)	15.0 (0.0, 15.6)	14.9 (0.0, 15.5)	15.2 (6.9, 15.6)	0.754
TOX3	18.3 (17.7, 18.5)	17.9 (17.7, 18.3)	18.3 (17.8, 18.5)	18.3 (17.8, 18.5)	0.794

FOXO3	15.8 (14.0, 16.8)	15.8 (0.0, 16.6)	16.0 (14.5, 16.8)	15.6 (10.2, 16.9)	0.802
JUN	15.3 (0.0, 17.3)	14.7 (0.0, 16.9)	15.2 (0.0, 17.4)	15.7 (0.0, 17.3)	0.81
CEBPB	17.5 (16.5, 18.2)	17.4 (16.7, 18.1)	17.4 (16.5, 18.1)	17.8 (16.7, 18.2)	0.818
HNF1B	16.8 (15.5, 17.3)	17.0 (16.4, 17.2)	16.8 (15.7, 17.4)	16.7 (14.9, 17.3)	0.894
C1D	16.9 (0.0, 17.5)	16.5 (0.0, 17.4)	16.9 (0.0, 17.5)	16.7 (15.7, 17.6)	0.905
ID1	18.2 (16.9, 18.7)	17.9 (16.9, 18.7)	18.3 (17.2, 18.6)	18.0 (16.9, 18.7)	0.933
CHEK1	14.6 (0.0, 17.2)	15.1 (0.0, 15.9)	13.9 (0.0, 18.3)	15.5 (0.0, 17.1)	0.963
SIRT1	15.1 (0.0, 16.5)	14.7 (0.0, 16.9)	15.8 (0.0, 16.5)	15.2 (0.0, 16.3)	0.966
KIFAP3	16.8 (16.1, 17.4)	16.7 (16.0, 17.7)	16.8 (16.2, 17.4)	16.9 (16.2, 17.2)	0.998

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**Supplementary Figure 1** The expression SHARPIN was knocked down by siRNA in colorectal cells. A. HCT116; B. SW480. Con, control group; siSHARPIN, SHARPIN knockdown group. <sup>a</sup>P < 0.05; <sup>b</sup>P < 0.01.