

Supplementary Materials

Figure S1. The expression level of lncRNAs in CRC with (n = 7) and without (n = 8) liver metastasis.

Figure S2. UICLM has no protein coding capability. In the translation assay, a 2274-bp genomic region containing UICLM was cloned into a pcDNA vector and expressed using the TnT Quick Coupled Transcription/Translation System (Promega). The absence of a specific band indicated that UICLM is a transcript with no protein-coding capacity. Luciferase in vitro translation served as positive control.

Figure S3. Subcellular location of UICLM in CRC cells. GAPDH and U6 were used as cytoplasm and nuclear localization markers, respectively.

Figure S4. Ectopic expression of UICLM promotes CRC cell proliferation. (A) The expression of UICLM was significantly increased after transfection of a UICLM cDNA vector in HCT116 and HT-29 cells. (B) Ectopic expression of UICLM promoted cell proliferation in HCT116 and HT-29 cells, as demonstrated by a CCK-8 assay ($*P < 0.05$). (C) and (D) Ectopic expression of UICLM promoted cell colony formation in HCT116 and HT-29 cells ($*P < 0.05$).

Figure S5. The infection efficiency of lentivirus in SW620 and DLD1 cells. (A) and (B) Because this vector contains a GFP fragment, the cells emit green fluorescence when infected by the virus. The CRC cells were observed under light and green fluorescence microscopy. Real-time PCR was performed to detect the knockdown efficiency of UICLM in SW620 and DLD-1 cells.

Figure S6. Ectopic expression of UICLM promotes CRC cell invasion and EMT. (A) Ectopic

expression promoted cell invasion in HCT116 and HT-29 cells ($*P < 0.05$). **(B)** Ectopic expression of UICLM markedly increased the expression of mesenchymal markers (N-cadherin, Vimetin, Snail, Slug) while decreasing the expression of epithelial markers (E-cadherin, α -catenin, β -catenin) ($*P < 0.05$).

Figure S7. Effect of Knockdown of UICLM on pre-miR-215 in CRC cells. Knockdown of UICLM does not affect the expression of pre-miR-215 in SW620 and DLD-1 cells.

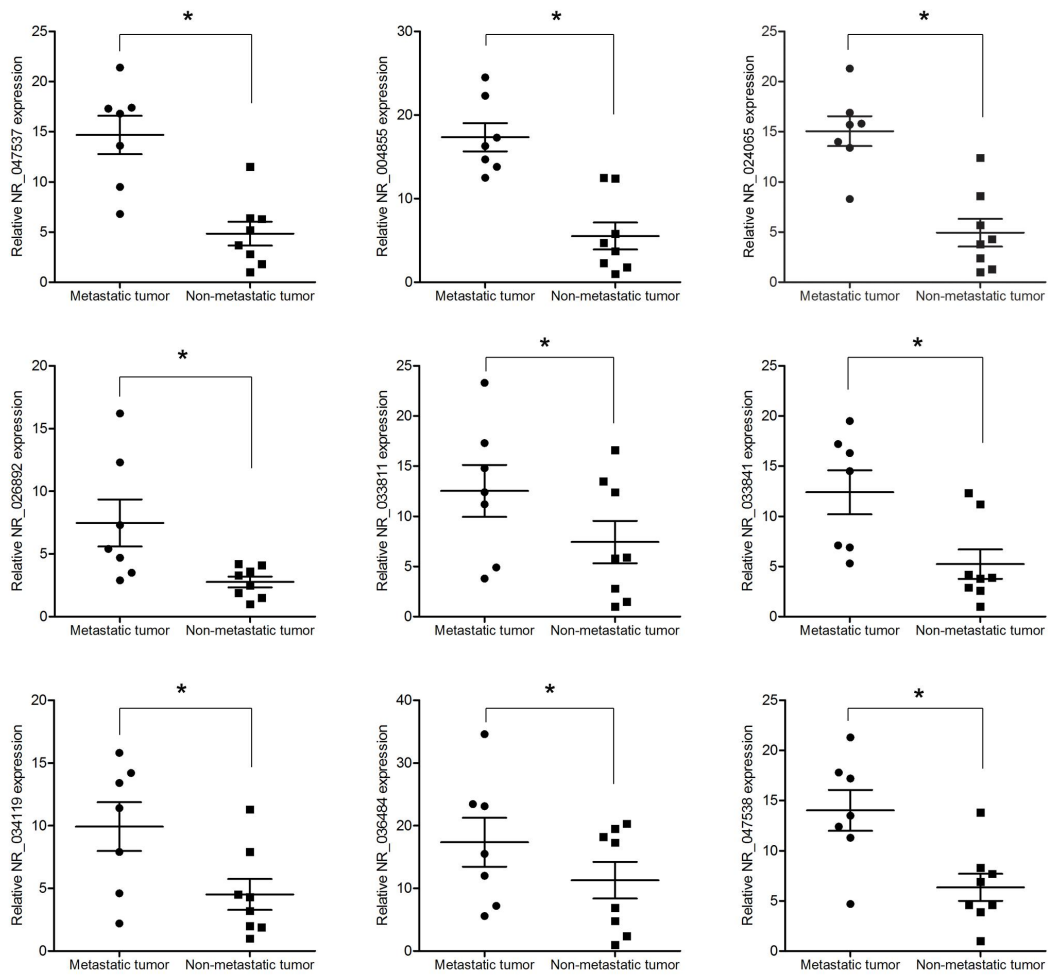


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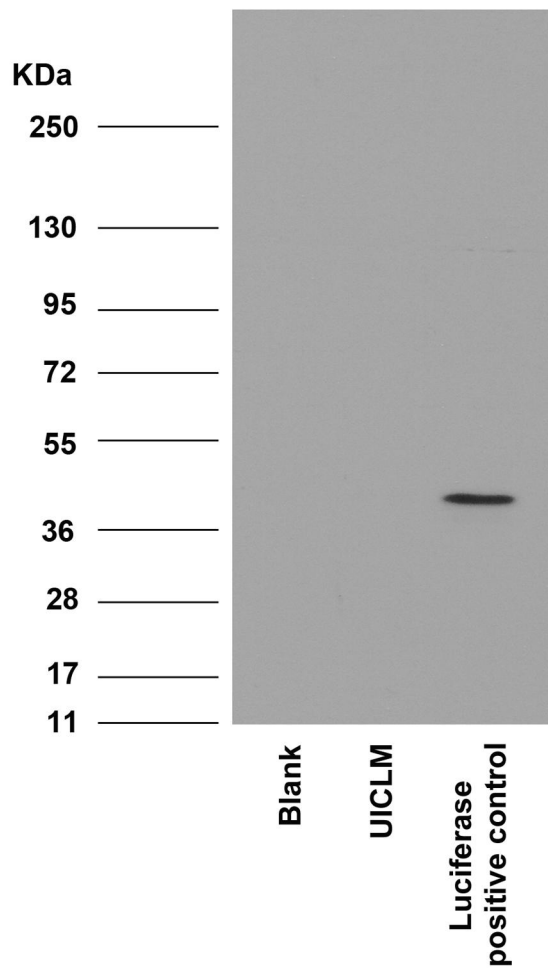


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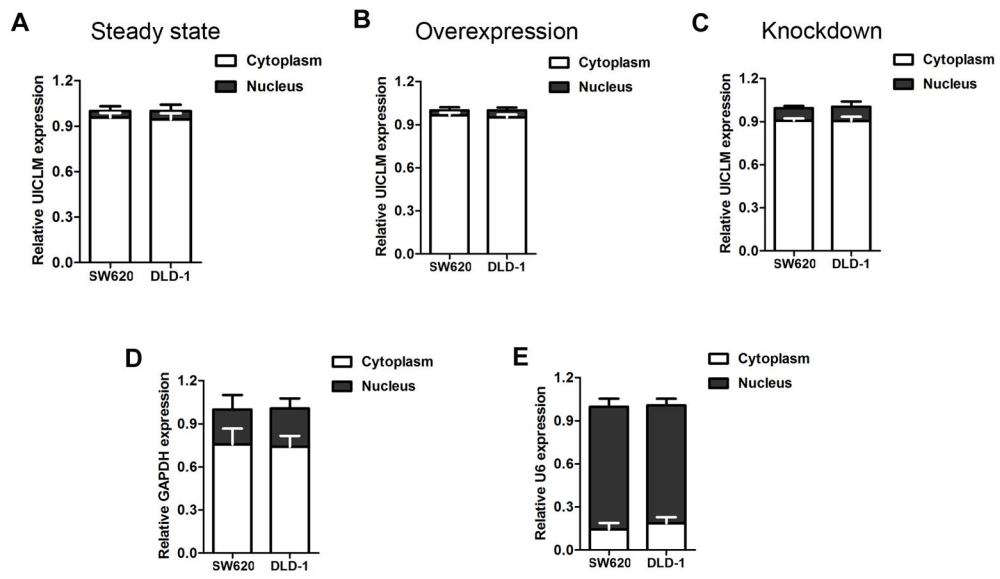


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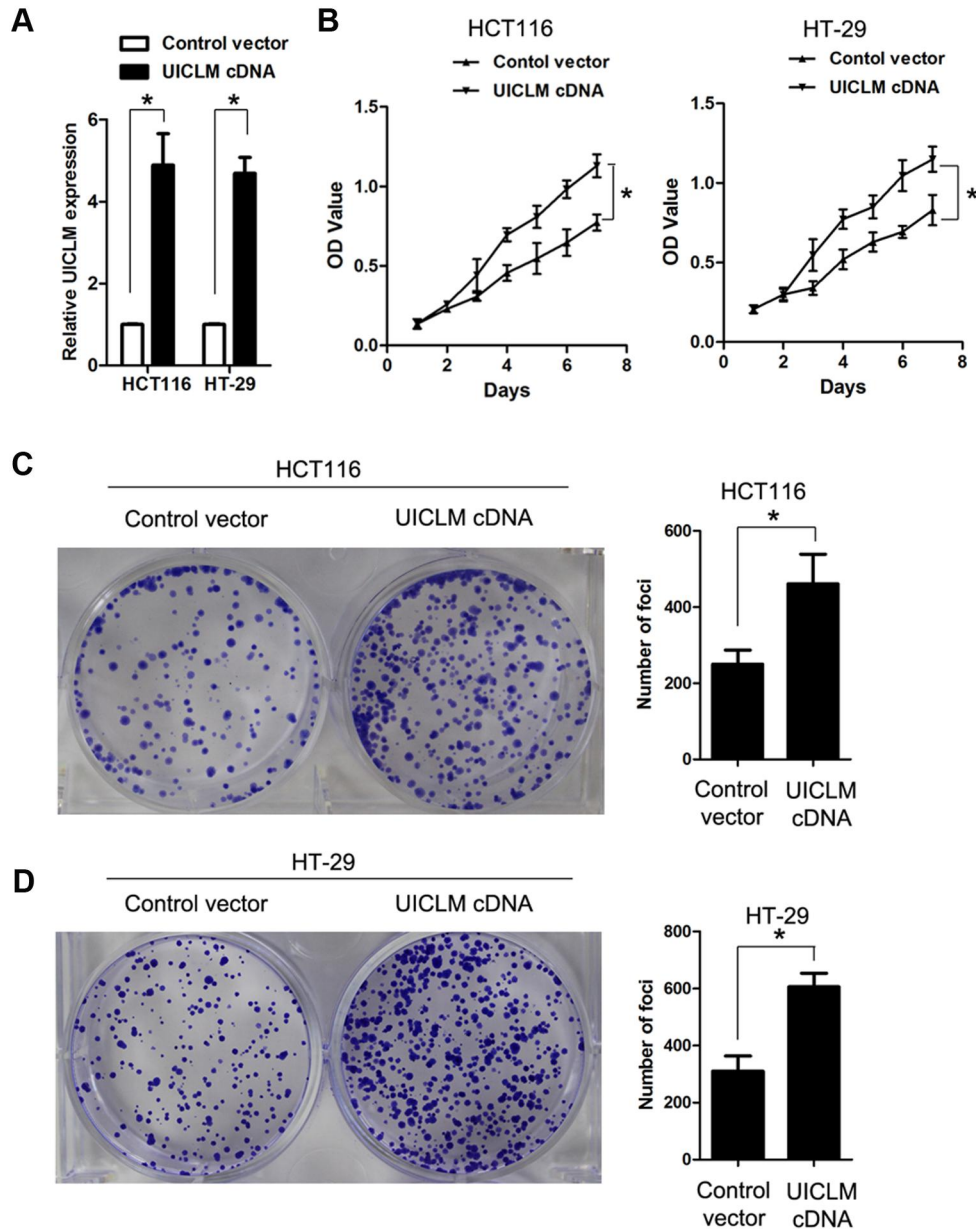


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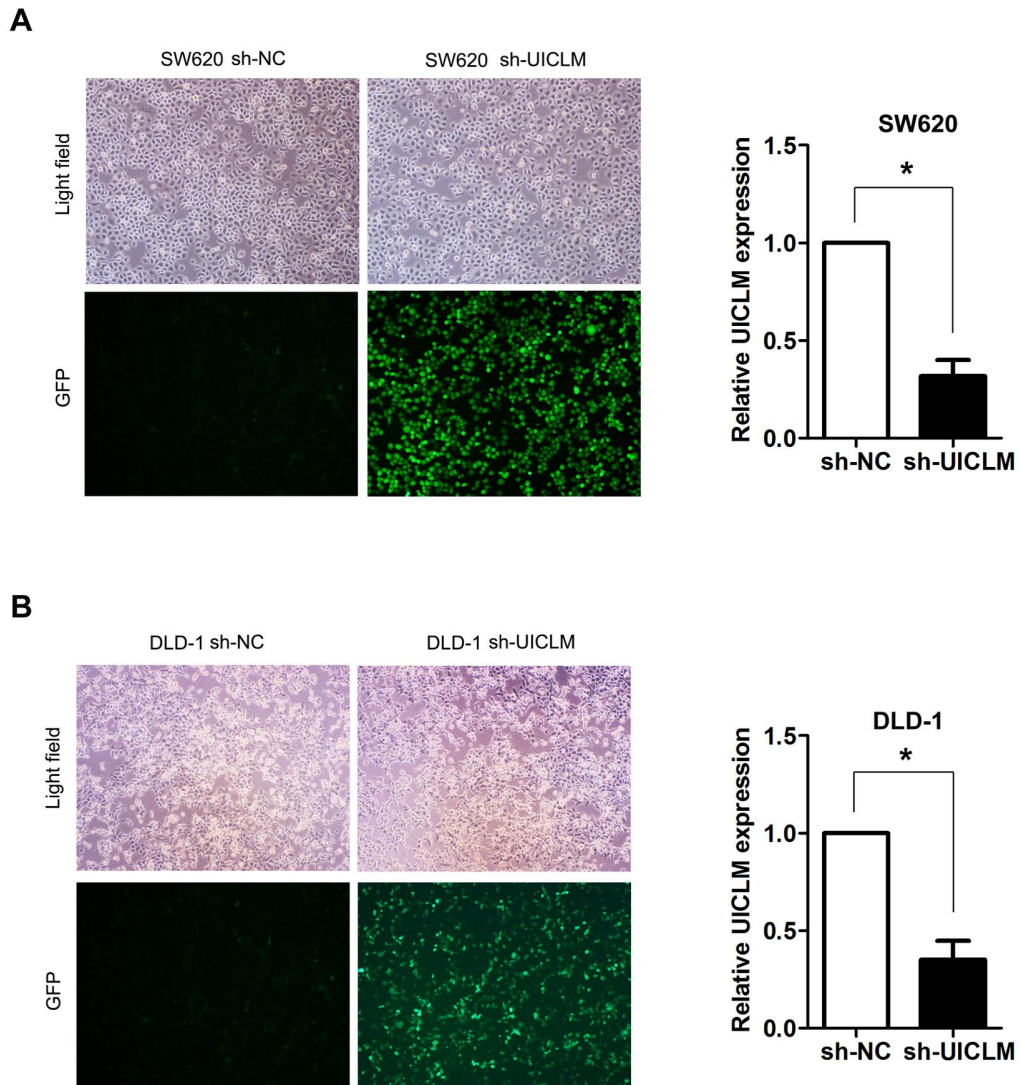


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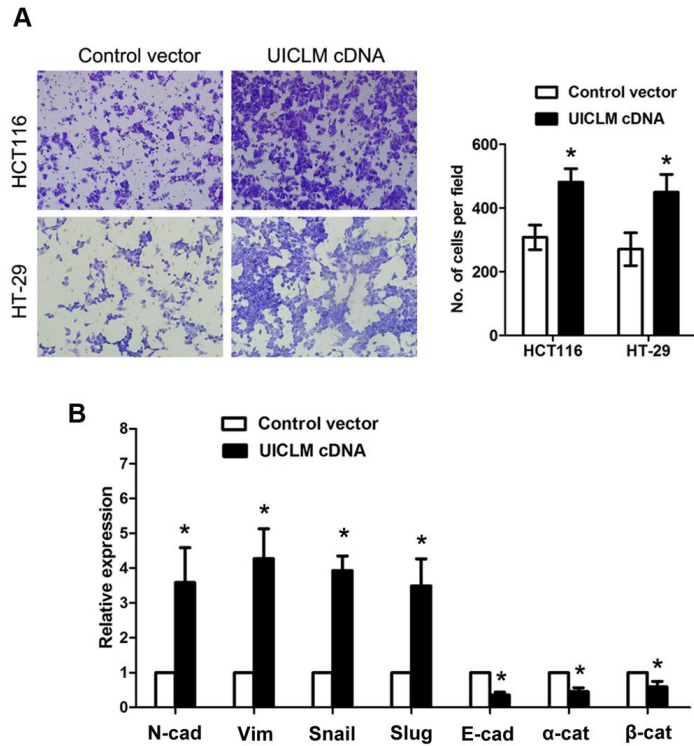


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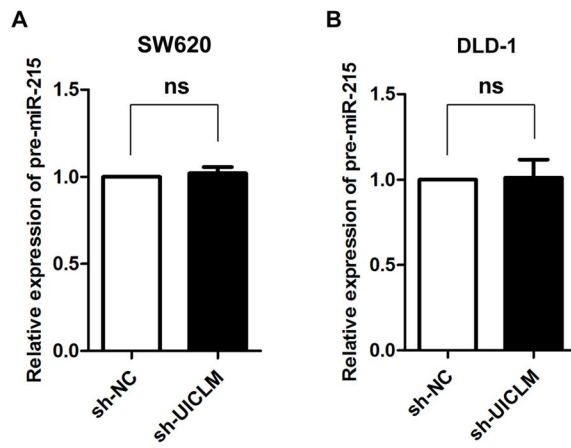


Figure S7. Effect of Knockdown of UICLM on pre-miR-215 in CRC cells. Knockdown of UICLM does not affect the expression of pre-miR-215 in SW620 and DLD-1 cells.

Supplementary Table 1 The clinicopathological characteristics of the 15 CRC patients

Characteristics	CRC without metastases (n = 8)	CRC with liver metastases (n = 7)
Gender		
Male	5	5
Female	3	2
Median age	62.8	57.3
Tumor site		
Colon ascendens	2	1
Colon transversum	3	1
Colon descendens	1	2
Colon sigmoideum	2	3
T stage		
T3	5	3
T4	3	4
N stage		
N0	0	0
N1	6	3
N2	2	4
Histological grade		
Well	1	0
Moderate	4	6
Poor	2	2

Supplementary Table 2 Primers used in the paper were listed.

Gene	Primer	Sequence(5'-3')
Primers for qRT-PCR		
NR_024065	forward	AGAAAAGACAGCCACACCCAA
	reverse	CCTGTGTGAGCTTCCGTTCC
NR_026862	forward	GGAGGATCCTGGAGGTGTCT
	reverse	GGCCCACGTAGAGCATAGTC
NR_047538	forward	GCCGGACTAGTGTCCCTTTT
	reverse	TCGGGAAAGGATTCCAGCAC
NR_004855	forward	ACTCTGAAGTAAAGGCCGGA
	reverse	TGCCAGGAAACTTCTTGCTTG
NR_047537	forward	GCCGGACTAGTGTCCCTTTT
	reverse	TCGGGAAAGGATTCCAGCAC
NR_026892	forward	CTCGGGGTTACCAGCAATGT
	reverse	AGTTGGCTGATTCAACAGGCT
NR_033841	forward	GGATGAGGAGACATCCACGG
	reverse	GAGTCCTGACTGGCGTTGAA
NR_033811	forward	CAGCATCTTTGGGGCCTACA
	reverse	GGGGTCATCCCCTCACCTTA
NR_036484	forward	CACCAATGACTCGGGGACAA
	reverse	CTCCGCTCGGCATTCAAGTAT
NR_034119	forward	GGGGACCGAGACCTATGAGA
	reverse	GAAAGCTGCAACATGCTCCC
miR-215	forward	GGGTCCGAGGTATTGCACT
	reverse	CGATGACCTATGAATTGACAGACG
U6	forward	CTCGCTTCGGCAGCACA
	reverse	AACGCTTCACGAATTTGCGT
ZEB2	forward	ACCAGCGGAAACAAGGAT
	reverse	TTTATGTCGCAGAAGGGAAC
GAPDH	forward	CATCACCATCTTCCAGGAGCG
	reverse	TGACCTTGCCACAGCCTTG
β -actin	forward	GTGCTATGTTGCCCTGGACT
	reverse	TGTTGGAAGGTGGAGAGGGA
Primers for ZEB2 3'UTR		
ZEB2 3'UTR-wt	forward	CATTTTATATTTCCCTAATTT
	reverse	CATAGGTATGGAATTTTAAAAACA
ZEB2 3'UTR-mut	forward	TATGTCTCCCTCTTTTGTAGCTAA
	reverse	TAAAAAGAGGGAGACATAAATACAATGTATGATA

Supplementary Table 3 The correlation between clinicopathological parameters and lncRNA UICLM expression levels in 122 CRC patients.

Variables	n	Low UICLM expression (%)	High UICLM expression (%)	<i>P</i> value
Age				0.085
<60	81	45(73.7)	36(59.0)	
≥60	41	16(26.3)	25(41.0)	
Gender				0.348
Male	77	41(67.2)	36(59.0)	
Female	45	20(32.8)	25(41.0)	
Tumor size				0.004 ^a
<5cm	39	27(44.2)	12(19.0)	
≥5cm	83	34(55.8)	49(81.0)	
Tumor depth ^b				0.359
m/sm/mp	51	28(45.9)	23(37.7)	
ss/se/si	71	33(54.1)	38(62.3)	
Histological grade				0.131
Well	22	13(21.3)	9(14.7)	
Moderate	31	19(31.1)	12(19.6)	
Poor and others	69	29(47.6)	40(65.7)	
Lymph node invasion				0.081
Absent	39	24(39.3)	15(24.5)	
Present	83	37(60.7)	46(75.5)	
Liver metastasis				0.002 ^a
Absent	67	42(68.8)	25(40.9)	
Present	55	19(31.2)	36(59.1)	
Lung metastasis				0.168
Absent	85	46(75.4)	39(63.9)	
Present	37	15(24.6)	22(36.1)	
TNM stage				0.008 ^a
I-II	42	28(45.9)	14(22.9)	
III-IV	80	33(54.1)	47(77.1)	

^a $P < 0.05$, Chi-square test.

^bm, tumor invasion of mucosa; sm, submucosa; mp, muscularis propria; ss, subserosa; se, serosa penetration; si, invasion to adjacent structures.

Supplementary Table 4 Univariate and multivariate analyses of various potential prognostic factors in 122 CRC patients

Factors	Univariate analysis		Multivariate analysis	
	HR ^b (95%CI ^c)	<i>P</i>	HR ^b (95%CI ^c)	<i>P</i>
Age	1.12(0.79-1.23)	0.236	-	-
Gender	1.05(0.71-1.18)	0.354	-	-
Histological grade	1.18(0.95-1.53)	0.089	-	-
Tumor size	1.08(0.97-1.74)	0.012 ^a	0.97(0.65-1.26)	0.145
Tumor depth	1.17(1.06-1.56)	0.079	-	-
Lymph node invasion	1.38(1.15-1.79)	0.032 ^a	1.12(0.73-1.31)	0.823
Liver metastasis	1.83(1.21-2.28)	<0.001 ^a	1.46(1.26-1.79)	0.017 ^a
TNM stage	1.53(1.26-2.24)	<0.001 ^a	1.04(0.83-1.68)	0.133
UICLM expression	2.13(1.77-3.06)	<0.001 ^a	1.53(1.24-2.15)	0.009 ^a

^a*P* < 0.05.

^bHR, hazard ratio.

^cCI, confidence interval.

Supplementary Table 5. Differentially expressed genes after knockdown of UICLM in CRC cells

transcript	Gene	sh-NC	sh-UICLM	log2FoldChang	p-value	q-value
NM_001005464	HIST2H3A	27.363987	6.3790248	-2.10087064	0.000299128	0.018374341
NM_001171653	ZEB2	28.4477	8.0991359	-1.812472116	0.000883849	0.045723614
NM_001253909	AKR1C3	34.074033	9.802820667	-1.797403893	0.000297993	0.018337946
NM_001256278	RAB34	39.5944	11.66439067	-1.763185454	0.000120809	0.008450987
NM_003531	HIST1H3C	634.65933	191.7664333	-1.726632189	6.80E-52	1.19E-48
NM_003106	SOX2	37.7377	11.41071413	-1.725617413	0.000220861	0.014267536
NM_000802	FOLR1	942.10633	285.2519567	-1.72365312	5.76E-76	2.91E-72
NM_021052	HIST1H2AE	678.65367	205.6011333	-1.722827303	3.42E-55	7.53E-52
NM_001001390	CD44	38.2577	11.62852433	-1.718082114	0.000209618	0.01359322
NM_003534	HIST1H3G	587.67067	179.3345533	-1.712354402	1.30E-47	2.20E-44
NM_021018	HIST1H3F	757.34067	232.7117967	-1.702398053	2.48E-60	7.39E-57
NM_003543	HIST1H4H	512.32333	157.7197667	-1.699691118	2.73E-41	4.07E-38
NM_001257386	ABCG2	41.4785	12.81704733	-1.694299776	0.000133457	0.009158599
NM_001253835	IGFBP7	43.8465	13.576898	-1.69130779	8.77E-05	0.006418791
NM_001098408_dup1	GAGE12C	32.323733	10.01798757	-1.69000111	0.000763351	0.041128393
NM_001098410_dup3	GAGE12H	32.323733	10.01798757	-1.69000111	0.000763351	0.041128393
NM_001098418_dup1	GAGE12E	32.323733	10.01798757	-1.69000111	0.000763351	0.041128393
NM_021062	HIST1H2BB	118.96933	36.892003	-1.689209713	1.08E-10	2.43E-08
NM_003495	HIST1H4I	311.104	96.52253667	-1.688459208	1.71E-25	1.15E-22
NM_001127199_dup5	GAGE12D	31.182433	9.680376333	-1.687598474	0.000959073	0.049163156
NM_003511	HIST1H2AL	259.53333	80.82223	-1.683095781	1.94E-21	1.02E-18
NM_003881	WISP2	68.786067	21.54395033	-1.674833553	1.08E-06	0.000127043
NM_001757	CBR1	35.060133	10.9889802	-1.673773975	0.000501498	0.028829567
NM_005980	S100P	170.04567	53.32134233	-1.673137237	1.83E-14	6.06E-12
NM_003525	HIST1H2BI	277.303	87.12146567	-1.670363094	1.48E-22	8.32E-20
NM_001632	ALPP	59.824333	18.79991433	-1.670006327	5.68E-06	0.00055943
NM_003518	HIST1H2BG	359.11467	113.5741267	-1.660810364	1.70E-28	1.46E-25
NM_000422	KRT17	824.41967	261.2707567	-1.657833264	5.08E-63	1.84E-59
NM_005325	HIST1H1A	51.075467	16.28088733	-1.64945115	3.27E-05	0.002691001
NM_001270452	PRSS21	60.026967	19.137719	-1.649191879	6.71E-06	0.00065206
NM_001136485	C11orf86	78.6382	25.11520467	-1.646669268	2.64E-07	3.53E-05
NM_005320	HIST1H1D	227.8	72.86278567	-1.644513689	2.08E-18	8.83E-16
NM_012101	TRIM29	39.685	12.716432	-1.641899872	0.000263442	0.016574254
NM_005322	HIST1H1B	507.95833	163.7539	-1.633180894	1.18E-38	1.57E-35
NM_020650	RCN3	54.111467	17.48321667	-1.629963701	2.26E-05	0.00191746
NM_004335	BST2	105.66853	34.170053	-1.628741435	3.26E-09	5.97E-07
NM_003524	HIST1H2BH	287.41533	93.619742	-1.618252336	2.68E-22	1.46E-19
NM_054012	ASS1	761.584	248.6505	-1.614883837	3.88E-56	8.93E-53
NM_015720	PODXL2	44.4414	14.51240533	-1.614617609	0.000137731	0.009388328
NM_001160354	LY6K	74.7962	24.426686	-1.614506832	7.60E-07	9.14E-05
NM_005258	GCHFR	78.193967	25.55628433	-1.6133792	4.33E-07	5.51E-05
NM_003519	HIST1H2BL	334.19933	109.26923	-1.612821657	1.53E-25	1.05E-22
NM_001760	CCND3	46.476933	15.21643333	-1.610884642	9.96E-05	0.007214771
NM_001160355	LY6K	85.281067	27.925656	-1.610634312	1.36E-07	1.99E-05
NM_003064	SLPI	63.182	20.73552333	-1.607409147	5.90E-06	0.000578032
NM_003380	VIM	117.85667	38.71170167	-1.606191737	6.28E-10	1.26E-07
NM_031313	ALPPL2	40.922867	13.48955533	-1.601064418	0.000278434	0.017345113
NM_000077	CDKN2A	76.112933	25.15466333	-1.597315741	7.50E-07	9.07E-05
NM_001193503	ENO3	39.188967	13.025104	-1.589152641	0.000405711	0.02378201

NM_058197	CDKN2A	70.5548	23.49921	-1.586131979	2.16E-06	0.000237046
NM_004925	AQP3	105.813	35.52019333	-1.574805546	7.91E-09	1.39E-06
NM_003280	TNNC1	57.865233	19.44042533	-1.573637023	2.00E-05	0.001721229
NM_001553	IGFBP7	51.4926	17.33021333	-1.571075703	5.87E-05	0.004539672
NM_003522	HIST1H2BF	344.90333	116.29732	-1.568374221	2.88E-25	1.92E-22
NM_022746	MARC1	66.151133	22.53313	-1.553718146	6.33E-06	0.000616896
NM_145040	PRKCDBP	78.073033	26.8126	-1.5419132	1.08E-06	0.000127314
NM_003739	AKR1C3	63.1204	21.68451167	-1.541441394	1.17E-05	0.001060195
NM_005709	USH1C	54.246567	18.68105667	-1.537955769	4.99E-05	0.003954672
NM_007173	PRSS23	80.3978	27.84041333	-1.529975394	8.75E-07	0.00010449
NM_001628	AKR1B1	63.3771	22.07297333	-1.521680666	1.38E-05	0.001234823
NM_020731	AHRR	38.675867	13.553615	-1.512755924	0.000722922	0.039116554
NM_001271606	BASP1	108.002	38.19899267	-1.49945153	2.02E-08	3.23E-06
NM_025130	HKDC1	38.3377	13.56916333	-1.49843202	0.000835513	0.043759469
NM_001037330	TRIM16L	51.134967	18.13859	-1.495247847	0.000117263	0.008248474
NM_004878	PTGES	74.7868	26.68390333	-1.486813934	3.53E-06	0.000370772
NM_003785	PAGE1	62.874767	22.48069667	-1.483794396	2.18E-05	0.001862289
NM_001172415	BAG1	55.816833	19.96844333	-1.482978408	6.39E-05	0.004860014
NM_033518	SLC38A5	41.31	14.81108	-1.479814217	0.000595496	0.033473341
NM_006579	EBP	96.871167	34.83553333	-1.475507666	1.55E-07	2.24E-05
NM_001253908	AKR1C3	55.2851	20.05602433	-1.462855058	8.29E-05	0.006108999
NM_003513	HIST1H2AB	291.31833	106.7619	-1.448199611	3.15E-19	1.47E-16
NM_004526	MCM2	119.43467	43.95316333	-1.442182743	1.07E-08	1.80E-06
NM_005556	KRT7	158.21567	58.27061	-1.441052145	4.73E-11	1.10E-08
NM_000076	CDKN1C	50.4242	18.65602333	-1.434474792	0.000215244	0.013940189
NM_005860	FSTL3	69.308467	25.66803667	-1.433058652	1.46E-05	0.001302397
NM_004481	GALNT2	58.262033	21.61992667	-1.430194423	7.25E-05	0.00542808
NM_006332	IFI30	137.522	51.13093333	-1.427394165	1.15E-09	2.25E-07
NM_001122630	CDKN1C	47.6229	17.71064	-1.427039129	0.000342081	0.020576024
NM_006500	MCAM	48.534833	18.30575	-1.406723655	0.000352028	0.021049376
NM_004553	NDUFS6	195.53433	73.8191	-1.405355895	7.63E-13	2.11E-10
NM_004493	HSD17B10	130.99667	49.50363333	-1.40392378	4.58E-09	8.26E-07
NM_001311	CRIP1	119.48667	45.37101	-1.397006958	2.46E-08	3.90E-06
NM_004528	MGST3	90.2107	34.41416	-1.390296267	1.39E-06	0.000159319
NM_003509	HIST1H2AI	419.29367	160.5965	-1.384520587	3.40E-25	2.23E-22
NM_014220	TM4SF1	323.26767	125.2805667	-1.367566573	1.99E-19	9.40E-17
NM_021732	AVPI1	92.1843	35.77582	-1.36553623	1.53E-06	0.000173223
NM_004092	ECHS1	102.68517	39.91477333	-1.363233069	4.04E-07	5.17E-05
NM_001193572	CSRP1	102.1456	39.87036667	-1.357238282	4.77E-07	6.04E-05
NM_024830	LPCAT1	72.889833	28.53708667	-1.352879543	2.21E-05	0.001883352
NM_001277224	TAGLN2	179.09133	70.48846667	-1.345236396	3.62E-11	8.68E-09
NM_004417	DUSP1	151.14833	59.52196333	-1.344471051	1.22E-09	2.37E-07
NM_006082	TUBA1B	966.61433	382.2433333	-1.338449048	5.91E-53	1.11E-49
NM_004546	NDUFB2	140.07733	55.41936667	-1.337761396	5.64E-09	1.01E-06
NM_201222	MAGED2	53.524467	21.19460667	-1.336501322	0.000319403	0.019349874
NM_003536	HIST1H3H	1001.8043	396.7061667	-1.336458028	1.09E-54	2.30E-51
NM_003538	HIST1H4A	284.48033	112.8725667	-1.333634034	1.20E-16	4.64E-14
NM_177433	MAGED2	54.4787	21.68008333	-1.329321975	0.000300508	0.018425574
NM_003530	HIST1H3D	476.75667	190.5489	-1.323091833	1.68E-26	1.25E-23
NM_004168	SDHA	121.21867	48.49706667	-1.321642485	8.03E-08	1.21E-05
NM_001031711	ERGIC1	114.72833	45.94116667	-1.320362324	1.82E-07	2.55E-05

NM_001003714	ATP5J2	148.30867	59.39846667	-1.320105312	3.02E-09	5.55E-07
NM_174983	MFSD12	63.909567	25.63213667	-1.31807816	0.000101138	0.007275875
NM_001271959	SLC39A1	63.920967	25.70972	-1.313975328	0.000105253	0.007507919
NM_052844	WDR34	97.713433	39.45939	-1.308188259	1.78E-06	0.000198522
NM_001271961	SLC39A1	67.3925	27.27486	-1.305016254	7.51E-05	0.005618574
NM_003529	HIST1H3A	155.84533	63.07346667	-1.305009821	1.73E-09	3.29E-07
NM_001487	BLOC1S1	58.5346	23.81392333	-1.297484335	0.000240304	0.015289462
NM_001136053	TPRA1	55.350667	22.61939	-1.29104067	0.000376113	0.022305158
NM_004494	HDGF	167.61233	68.56083333	-1.28967176	6.28E-10	1.25E-07
NM_079423	MYL6	697.03967	285.9494333	-1.285480712	2.82E-36	3.58E-33
NM_001042680	MFSD12	53.116533	21.88088667	-1.279489791	0.000544794	0.03100183
NM_004889	ATP5J2	143.54567	59.5545	-1.26922735	1.64E-08	2.66E-06
NM_015679	TRUB2	51.212467	21.34039333	-1.262908281	0.000784521	0.041824045
NM_003537	HIST1H3B	870.11633	362.7572333	-1.262203918	1.48E-43	2.42E-40
NM_003541	HIST1H4K	86.583633	36.54756667	-1.244318987	1.62E-05	0.001420494
NM_003510	HIST1H2AK	132.21933	55.8281	-1.243869783	9.96E-08	1.49E-05
NM_002360	MAFK	59.924833	25.31568667	-1.243122375	0.000337608	0.020379606
NM_017854	TMEM160	52.878933	22.38566667	-1.240117792	0.000778371	0.041627648
NM_003526	HIST1H2BC	693.30133	294.8367667	-1.233566093	8.75E-34	1.06E-30
NM_030782	CLPTM1L	94.835433	40.37696667	-1.231893662	7.64E-06	0.000728953
NM_014402	UQCRQ	92.5206	39.44736667	-1.229845626	1.02E-05	0.000932069
NM_001252383	CGA	126.19847	53.851936	-1.228624265	2.60E-07	3.49E-05
NM_021066	HIST1H2AJ	228.03267	97.36633333	-1.227745593	4.53E-12	1.15E-09
NM_001257134	COX14	60.034267	25.71451333	-1.223203355	0.000401552	0.023592826
NM_019056	NDUFB11	128.66667	55.1124	-1.223189488	2.21E-07	3.04E-05
NM_000852	GSTP1	557.17333	238.6614333	-1.223160759	4.15E-27	3.23E-24
NM_021058	HIST1H2BJ	456.44733	195.9753333	-1.219776327	2.11E-22	1.17E-19
NM_033414	ZNF622	59.444967	25.62183333	-1.21418095	0.000466082	0.027008236
NM_175054	HIST4H4	187.291	80.82386667	-1.212428297	5.49E-10	1.12E-07
NM_006339	HMG20B	135.204	58.34776667	-1.212388493	1.36E-07	1.99E-05
NM_001135822	FDPS	80.1211	34.61163333	-1.210925204	5.04E-05	0.003986061
NM_021065	HIST1H2AD	369.64033	159.703	-1.210730771	3.14E-18	1.30E-15
NM_002004	FDPS	70.886833	30.63376667	-1.210394914	0.000138205	0.009407968
NM_001834	CLTB	104.18833	45.49073333	-1.195549142	4.83E-06	0.000485834
NM_001024599	HIST2H2BF	404.02633	177.0153667	-1.190574721	2.90E-19	1.36E-16
NM_001135861	PHPT1	90.739733	40.04173333	-1.180229993	2.44E-05	0.002045225
NM_080593	HIST1H2BK	305.09367	135.2149333	-1.173997738	1.33E-14	4.54E-12
NM_207045	ENSA	82.5554	36.65203667	-1.171469218	6.35E-05	0.004857618
NM_002804	PSMC3	92.596367	41.22596667	-1.167402263	2.41E-05	0.002024741
NM_001257392	CD63	261.015	116.6602667	-1.161819441	1.65E-12	4.38E-10
NM_004111	FEN1	71.520067	32.02995333	-1.158926385	0.000225942	0.01446657
NM_004040	RHOB	142.325	64.09596667	-1.150883619	2.32E-07	3.17E-05
NM_001161334	HIST2H2BF	164.50633	74.48856667	-1.143052221	3.26E-08	5.07E-06
NM_002796	PSMB4	178.00833	80.97083333	-1.136470551	1.06E-08	1.80E-06
NM_002799	PSMB7	124.129	56.59263333	-1.133154034	1.89E-06	0.000208932
NM_001267559	PDCD6	119.30333	54.40146667	-1.1329169	3.00E-06	0.000319679
NM_003545	HIST1H4E	509.305	232.3970333	-1.131938229	5.22E-22	2.81E-19
NM_021064	HIST1H2AG	675.26467	309.3210667	-1.126347977	2.02E-28	1.71E-25
NM_001679	ATP1B3	143.79333	65.95186667	-1.124511391	3.50E-07	4.60E-05
NM_005176	ATP5G2	148.49667	68.33693333	-1.119693135	2.50E-07	3.38E-05
NM_000291	PGK1	280.539	129.7261333	-1.112732206	1.78E-12	4.69E-10

NM_003544	HIST1H4B	570.70033	264.393	-1.110049425	1.06E-23	6.23E-21
NM_182776	MCM7	92.8152	43.07626667	-1.10746787	5.38E-05	0.004237066
NM_003527	HIST1H2BO	304.02767	141.417	-1.104247056	3.08E-13	9.01E-11
NM_003517	HIST2H2AC	805.84867	377.8516667	-1.092688949	6.08E-32	6.29E-29
NM_003542	HIST1H4C	766.99933	360.861	-1.087782091	2.96E-30	2.73E-27
NM_001204526	SSR4	129.421	61.30793333	-1.077926052	3.21E-06	0.000340464
NM_002961	S100A4	354.019	167.8724667	-1.076461163	1.44E-14	4.85E-12
NM_001199877	SERF2	116.28967	55.1793	-1.075523847	1.06E-05	0.000965209
NM_001002027	ATP5G1	98.123533	46.64706667	-1.072812823	5.40E-05	0.004238996
NM_032704	TUBA1C	240.43067	114.3198667	-1.072544783	2.63E-10	5.50E-08
NM_001199875	SERF2	131.59533	62.57886667	-1.072360893	2.95E-06	0.000314661
NM_001165258	TMEM14C	84.6064	40.45173333	-1.064565277	0.000196338	0.012897198
NM_002668	PLP2	105.07047	50.3352	-1.06171766	3.48E-05	0.002853096
NM_006694	JTB	96.2933	46.25606667	-1.057792827	7.81E-05	0.005801072
NM_013237	PRELID1	101.42227	48.8779	-1.053120215	5.39E-05	0.004239401
NM_000997	RPL37	371.802	179.8032	-1.048115834	1.37E-14	4.65E-12
NM_024056	TMEM106C	69.468867	33.7237	-1.042603731	0.000925938	0.047609206
NM_000858	GUK1	119.424	58.00136667	-1.041933997	1.42E-05	0.001273573
NM_001037495	DYNLL1	76.7904	37.33166667	-1.040526044	0.000508784	0.029149189
NM_001199534	C20orf24	71.864767	34.9374	-1.040512381	0.000771809	0.04140789
NM_003746	DYNLL1	78.226567	38.03556667	-1.040309548	0.00045184	0.026273149
NM_001143841	TMEM106C	70.952233	34.51086667	-1.039797392	0.000840076	0.043817164
NM_002631	PGD	71.433933	34.79336667	-1.037797279	0.00082343	0.043395874
NM_003512	HIST1H2AC	624.482	304.263	-1.037341083	4.72E-23	2.75E-20
NM_001101	ACTB	604.41733	294.7373333	-1.036115221	2.56E-22	1.41E-19
NM_080748	ROMO1	101.895	49.7909	-1.033129262	6.93E-05	0.00522912
NM_018285	IMP3	95.765067	46.95933333	-1.028087556	0.000122866	0.00858302
NM_080596	HIST1H2AH	369.67167	181.3404333	-1.027543835	4.62E-14	1.45E-11
NM_032014	MRPS24	94.860567	46.59736667	-1.02556006	0.000136887	0.009355955
NM_005517	HMG2	93.0625	45.87033333	-1.020638552	0.000169148	0.011257114
NM_001204871	URGCP-MRPS	77.6581	38.30313333	-1.019673996	0.000597299	0.033500346
NM_003792	EDF1	240.257	118.6853	-1.017437207	1.68E-09	3.22E-07
NM_002167	ID3	75.4515	37.30186667	-1.016301754	0.000741785	0.040094383
NM_003945	ATP6VOE1	96.0036	47.93303333	-1.002068265	0.000171662	0.011394495
NM_001199356	RPL17-C18c	57.195167	114.6342333	1.003072801	2.14E-06	0.000235325
NM_001035006	RPL17	213.86733	428.961	1.004130349	4.42E-20	2.22E-17
NM_001261445	TXNRD1	53.904633	108.5841333	1.010332118	3.51E-06	0.000369482
NM_000982	RPL21	195.12467	405.164	1.054109825	2.18E-20	1.10E-17
NM_004396	DDX5	25.450833	53.7569	1.07873705	0.000605469	0.033846114
NM_001207067	BZW1	23.8787	51.32273333	1.103873711	0.000652118	0.035977289
NM_001267699	RPS3A	143.21167	322.6076667	1.171631698	4.08E-19	1.88E-16
NM_053056	CCND1	21.123567	47.82526667	1.178919562	0.000548999	0.03117106
NM_001675	ATF4	52.349933	123.4266	1.237393742	8.79E-09	1.54E-06
NM_006471	MYL12A	38.838633	92.43633333	1.250967598	5.22E-07	6.54E-05
NM_003756	EIF3H	29.8087	72.73263333	1.286869352	5.53E-06	0.000545804
NM_006708	GLO1	18.079867	46.2619	1.355440481	0.000168798	0.011248627
NM_003842	TNFRSF10B	17.849133	46.5862	1.38404863	0.000127391	0.008813965
NM_005801	EIF1	17.386867	46.0339	1.404698709	0.000118646	0.008322626
NM_006519	DYNLT1	13.576233	37.42163333	1.462789263	0.000356065	0.021265652
NM_006907	PYCR1	19.404567	54.7021	1.495200003	1.17E-05	0.001059447
NM_001271741	CSNK1A1	17.895567	50.83806667	1.506306939	2.16E-05	0.001847466

NM_002863	PYGL	9.23321	28.12791667	1.607098497	0.000955834	0.049046776
NM_145690	YWHAZ	32.221067	100.1201333	1.635655958	2.85E-10	5.86E-08
NM_000700	ANXA1	26.0537	81.2916	1.641618013	1.22E-08	2.03E-06
NM_080725	SRXN1	12.843267	41.20313333	1.681741856	3.76E-05	0.003052811
NM_002204	ITGA3	13.144767	43.01716667	1.710423972	2.05E-05	0.001758842
NM_000971	RPL7	179.80333	590.3183333	1.715073381	2.67E-56	6.45E-53
NM_004859	CLTC	10.308773	34.07616667	1.724890378	0.000137696	0.009398559
NM_001142403	CD164	8.11153	26.99973333	1.734899191	0.000658226	0.036156737
NM_148174	AZIN1	9.3898433	31.402	1.741683455	0.00023041	0.014715441
NM_004446	EPRS	7.518	25.30243333	1.750855315	0.000908116	0.046883229
NM_005347	HSPA5	56.083733	189.3329667	1.755271341	9.86E-20	4.80E-17
NM_014294	TRAM1	7.3328533	25.28026667	1.785565093	0.000782276	0.041792338
NM_002079	GOT1	11.707933	40.5985	1.793939989	1.96E-05	0.001685841
NM_016304	RSL24D1	20.8214	72.46906667	1.799298237	1.09E-08	1.84E-06
NM_006636	MTHFD2	25.224433	91.46323333	1.858370061	5.51E-11	1.27E-08
NM_012433	SF3B1	8.45315	30.73866667	1.862493632	0.000141077	0.009552093
NM_005348	HSP90AA1	28.699733	105.7654333	1.88175896	1.19E-12	3.16E-10
NM_001305	CLDN4	12.9347	48.30396667	1.900895073	1.34E-06	0.00015374
NM_145905	HMGA1	52.952933	199.3257333	1.912345467	6.38E-23	3.67E-20
NM_013943	CLIC4	7.89947	29.81006667	1.915971835	0.000135382	0.009265597
NM_145903	HMGA1	59.069	226.0277333	1.936026707	3.74E-26	2.67E-23
NM_181836	TMED7	8.5397267	32.76436667	1.939865846	5.52E-05	0.004320306
NM_024536	CHPF	6.5936533	25.37502333	1.944259206	0.000379736	0.022467388
NM_177560	CSNK2A1	9.2870333	35.76613333	1.945304439	2.44E-05	0.002043345
NM_004539	NARS	7.7021	29.9719	1.960286784	0.000103514	0.007415233
NM_002228	JUN	6.50649	25.56197	1.974047646	0.000317089	0.01923269
NM_052932	TMEM123	6.69226	26.50126667	1.985495916	0.000233508	0.014894542
NM_005953	MT2A	25.662	102.0166	1.991098406	4.75E-13	1.37E-10
NM_001206488	ATF3	5.4694867	21.75164667	1.99164728	0.000837502	0.043818313
NM_001008492	SEPT2	8.1010333	32.5357	2.005845745	4.08E-05	0.003293933
NM_003750	EIF3A	8.95583	36.1474	2.012992833	1.46E-05	0.001303978
NM_015641	TES	5.97098	24.20005333	2.018970586	0.000381061	0.022519515
NM_001030287	ATF3	5.29583	21.48614	2.020477608	0.000810275	0.042881088
NM_152829	TES	5.5606967	23.37427	2.071583763	0.000389476	0.022989975
NM_001568	EIF3E	23.5874	99.40823333	2.075348944	2.42E-13	7.30E-11
NM_022818	MAP1LC3B	5.3033733	22.51073333	2.08563084	0.000473577	0.027379881
NM_006330	LYPLA1	5.5454333	24.89187	2.166302511	0.000169903	0.011292496
NM_001806	CEBPG	4.56039	20.47695667	2.166772202	0.00064786	0.035859609
NM_002568	PABPC1	17.7796	80.23273333	2.17396808	1.34E-11	3.27E-09
NM_133376	ITGB1	20.142967	91.23766667	2.179353371	5.04E-13	1.44E-10
NM_001967	EIF4A2	23.264333	106.1324333	2.189673851	5.56E-15	1.94E-12
NM_005318	H1FO	10.428067	47.8399	2.197742663	1.46E-07	2.12E-05
NM_001252296	CEBPG	4.32215	19.96587667	2.207715373	0.000660982	0.03626878
NM_003299	HSP90B1	28.331167	131.5866333	2.215551029	1.95E-18	8.35E-16
NM_005139	ANXA3	8.1247433	38.00813333	2.22591403	2.35E-06	0.000255642
NM_201437	TCEA1	6.3766067	30.87287	2.275478807	1.64E-05	0.00143656
NM_012242	DKK1	5.4787133	27.45846	2.325341691	3.88E-05	0.003145244
NM_001164468	TMED7-TIC/	3.9726167	21.15368667	2.412747624	0.000226856	0.014506759
NM_003379	EZR	34.619733	199.7534	2.528553542	3.15E-31	2.95E-28
NM_001170797	ZFAND1	4.1590967	24.16223333	2.538411688	5.11E-05	0.004028304
NM_003816	ADAM9	3.8633467	22.69751667	2.554611416	8.17E-05	0.006033145

NM_178181	CDCP1	3.8753233	23.09821667	2.57539288	6.58E-05	0.004989012
NM_001005619	ITGB4	2.63538	15.99845333	2.601849531	0.000839878	0.043852021
NM_001199742	GADD45A	5.8995033	36.18351	2.616666957	4.73E-07	6.01E-05
NM_001206747	CAV2	2.5391867	15.82042667	2.639350146	0.000821503	0.043362008
NM_001199741	GADD45A	5.6286933	35.09981333	2.640591405	6.22E-07	7.66E-05
NM_007145	ZNF146	3.06311	20.10235667	2.714295561	0.00013058	0.009022342
NM_018976	SLC38A2	15.1278	99.65846667	2.719790182	1.51E-17	6.08E-15
NM_001099638	ZNF146	3.0948967	20.44792667	2.723991421	0.000111075	0.007856881
NM_004419	DUSP5	13.181567	91.3035	2.792148316	1.36E-16	5.22E-14
NM_003715	USO1	2.3358167	16.29561333	2.802484703	0.000466462	0.026999347
NM_001185022	CLDN7	8.9505533	63.10561667	2.817719638	5.04E-12	1.26E-09
NM_014819	PJA2	2.4836067	17.58552667	2.823879928	0.000263589	0.01656296
NM_153251	ZDHHC20	2.1451133	15.24248333	2.828972191	0.000674109	0.036829489
NM_001307	CLDN7	6.91274	50.17757333	2.859713132	5.61E-10	1.14E-07
NM_005242	F2RL1	3.6584867	28.11545	2.942044232	2.55E-06	0.000275438
NM_004521	KIF5B	2.6501633	20.48554	2.95045274	5.79E-05	0.004493792
NM_024699	ZFAND1	2.9386233	22.80509	2.95614351	2.17E-05	0.001855365
NM_078467	CDKN1A	6.2101167	48.27601	2.958614166	6.38E-10	1.27E-07
NM_001170796	ZFAND1	2.9324133	22.81058333	2.959542966	2.15E-05	0.001838725
NM_001079818	ITGA6	2.4362767	18.96034	2.960234953	0.000106883	0.007602804
NM_001220778	CDKN1A	6.3916433	50.08965	2.970253721	2.84E-10	5.87E-08
NM_002448	MSX1	2.4032067	18.92255667	2.977074402	0.000104153	0.007439991
NM_002166	ID2	1.9427367	15.87824333	3.030889045	0.000338334	0.020374887
NM_021127	PMAIP1	3.36558	28.00103	3.056552842	1.77E-06	0.000198831
NM_004318	ASPH	3.4428067	29.54429	3.101222256	7.85E-07	9.42E-05
NM_000097	CPOX	4.2107533	36.20821333	3.10416672	4.50E-08	6.96E-06
NM_018394	ABHD10	4.4485867	38.34504667	3.107621261	1.78E-08	2.86E-06
NM_005252	FOS	1.7085	15.44814333	3.176631302	0.000307469	0.018716437
NM_001127500	MET	2.4042867	22.64458333	3.235485168	1.07E-05	0.000972302
NM_001099645	RPL22L1	2.5409367	24.4173	3.264471358	4.44E-06	0.000455472
NM_003714	STC2	1.32965	12.84595333	3.272195516	0.00086179	0.044628018
NM_001172895	CAV1	1.275116	12.77002333	3.324060758	0.000826897	0.043488062
NM_004864	GDF15	13.6459	139.7756667	3.356573772	1.18E-28	1.03E-25
NM_001113547	LIMA1	1.5199257	15.92898667	3.389581818	0.000167585	0.011182463
NM_001172896	CAV1	1.4586733	15.31406667	3.392128707	0.000223216	0.014382959
NM_032468	ASPH	4.67353	49.0975	3.393065006	3.84E-11	9.10E-09
NM_001270550	MDK	1.1335007	12.37156667	3.448171062	0.000841529	0.043847812
NM_003535	HIST1H3J	2.0182367	22.83026667	3.499780445	5.09E-06	0.000508386
NM_001170938	ISYNA1	1.0737233	13.40994667	3.642609293	0.000390305	0.022985359
NM_024524	ATP13A3	1.0916323	14.37192333	3.718694207	0.000217564	0.014072453
NM_001394	DUSP4	1.18729	15.88509	3.741928997	9.80E-05	0.007117713
NM_001195057	DDIT3	5.87359	82.17175333	3.806328082	5.11E-19	2.31E-16
NM_005245	FAT1	2.7474967	41.86122667	3.929424952	1.34E-10	2.96E-08
NM_002970	SAT1	16.562933	256.6043333	3.953515429	3.84E-57	9.73E-54
NM_001040199	CLDND1	2.8926133	45.94675667	3.989517636	1.39E-11	3.38E-09
NM_016234	ACSL5	1.1353507	19.81711	4.125536719	7.44E-06	0.00071321
NM_025195	TRIB1	1.55568	27.44550667	4.140952736	1.30E-07	1.92E-05
NM_001277783	ATG12	1.7337633	32.07647	4.2095365	9.99E-09	1.70E-06
NM_006751	SSFA2	5.25807	99.10614667	4.236369284	6.15E-24	3.71E-21
NM_018948	ERRFI1	5.0698633	110.2013433	4.442051142	5.49E-27	4.22E-24
NM_022739	SMURF2	1.16607	26.95317	4.530728658	9.21E-08	1.39E-05

NM_052886	MAL2	1.122336	26.00946333	4.534460078	1.54E-07	2.22E-05
NM_001284	AP3S1	3.55276	84.27189333	4.5680394	3.07E-21	1.60E-18
NM_020672	S100A14	2.3847933	62.70305333	4.716599544	2.25E-16	8.52E-14
NM_014888	FAM3C	1.7682867	52.28312333	4.885921247	4.87E-14	1.52E-11
NM_006829	ADIRF	1.6501333	92.18511667	5.803879339	4.75E-24	2.97E-21
NM_003823	TNFRSF6B	1.4377433	109.7823167	6.254695731	4.18E-28	3.42E-25
NM_144497	AKAP12	2.0724867	162.1261167	6.289609881	1.18E-40	1.70E-37
NM_001161779	PDP1	1.4107967	125.4313833	6.474244478	1.23E-31	1.20E-28

Supplementary Table 6 The miRNAs that can bind to lincRNA UICLM predicted by bioinformatic tools.

microRNA	Seed position	Seed type	Transcript region
miR-9	Chr3:8614421	7-mer-A1	ncRNA
miR-153	Chr3:8615232	8-mer	ncRNA
let-7/98/4458/4500	Chr3:8615049	7-mer-A1	ncRNA
miR-190	Chr3:8615040	7-mer-m8	ncRNA
miR-215	Chr3:8615343	7-mer-m8	ncRNA
miR-205	Chr3:8615295	7-mer-A1	ncRNA
miR-124	Chr3:8615337	7-mer-A1	ncRNA