Supplemental Information

miR-1290 Is a Biomarker in DNA-Mismatch-Repair-

Deficient Colon Cancer and Promotes Resistance

to 5-Fluorouracil by Directly Targeting hMSH2

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Supplementary Table S1. Clinicopathologic features of the 4 dMMR and 4 pMMR colon cancer tissue samples used for laser capture microdissection (LCM)

Gender	Age (years)	MMR status	Nodal stage	AJCC stage
Male	63	dMMR	0	IIB
Female	71	dMMR	0	IIA
Male	60	dMMR	1	IIIA
Male	68	dMMR	1	IIIB
Female	73	pMMR	1	IIIA
Female	62	pMMR	0	IIB
Male	66	pMMR	2	IIIC
Female	70	pMMR	1	IIIA

MMR: Mismatch Repair

AJCC: American Joint Committee on Cancer

Supplementary Table S2. Differential miRNA expression between dMMR and pMMR colon cancer cells obtained by laser capture microdissection (LCM)

miRNA	Expression level		P value	Fold change (dMMR/ pMMR)	Up/Down (dMMR/ pMMR)
	dMMR cell	pMMR cell			
miR-1290	5.20	-2.03	0.008	9.63	Up
miR-664b-5p	3.01	-2.96	0.0004	7.08	Up
miR-3607-5p	2.73	-2.09	0.004	6.65	Up
miR-3138	1.35	-2.15	0.009	7.89	Up
miR-298	2.08	-1.47	0.037	5.03	Up
miR-3653	3.05	-1.82	0.02	8.02	Up
miR-1291	1.32	-2.96	<0.001	8.34	Up
miR-3679-3p	1.68	-2.79	<0.001	7.29	Up
miR-149-3p	1.06	-2.66	<0.001	5.94	Up
miR-30a-5p	1.12	-2.64	<0.001	6.63	Up
miR-345-3p	1.15	-2.25	<0.001	6.79	Up
miR-6511b-5p	1.14	-2.13	0.002	6.58	Up

dMMR: Mismatch repair-deficient

pMMR: Mismatch repair-proficient

Supplementary Table S3. Oligonucleotide Sequence for the primers used in the study.

Name	Oligonucleotide sequence (5' - 3')	
	Forward	Reverse
miR-1290	GGGGATCACATTGCCAGG	AGTGCGTGTCGTGGAGTC
miR-3138	GCCTCCCAAACAAGGGAA	CATCCCCTTGTTCCAGCTG
miR-298	TGTGTTGGCGTACAGGTCT	GGGAAATCGTGCGTGACAT
miR-3653	TCTCCCGAGAGACATATTT	GATGAGAAGGTATGAATCA
miR-1291	AGCACATATACTAATGGCA	TTCACGAATTTGCGTGTCA
miR-30a-5p	GAAGGCGCCCAAGCAGCA	CTCGGGGCCGGCTGACGA
hMSH2	GTTCCCGAGAGACATATTAGCAAC	CGAGAGAAGGTATGAATCACAGG
GAPDH	CATGGGTGTGAACCATGAGAAGTA	CAGTAGAGGCAGGGATGATGTTCT
U6	GCTTCGGCAGCACATATACTAAAAT	CGCTTCACGAATTTGCGTGTCAT

Supplementary Table S4. Univariate and multivariate Cox proportional hazard models for overall survival (OS)

	Overall survival (OS)			
	Univariate		Multivariate	
	HR (95% CI)	P	HR (95% CI)	P
Age				
<65 y	1			
≥65 y	1.42 (0.92-2.20)	0.115		
Gender				
Male	1			
Female	1.34 (0.87-2.07)	0.188		
Location				
Right	1			
Transverse	1.07 (0.84-1.36)	0.606		
Left	1.53 (0.95-1.91)	0.827		
T stage				
T1+T2	1			
T3+T4	1.72 (0.55-5.46)	0.35		
N stage				
N0	1		1	
N1+N2	6.50 (3.86-10.98)	<0.001[*]	18.65 (2.35-172.91)	0.003[*]
AJCC stage				
II	1		1	
III	6.50 (3.86-10.98)	<0.001[*]	18.65 (2.35-172.91)	0.003[*]
Differentiation				
Well	1		1	
Poor	3.09 (1.93-4.93)	<0.001[*]	3.05 (1.65-4.61)	0.364
Vascular invasion				
No	1		1	
Yes	4.95 (2.68-9.15)	<0.001[*]	1.82 (1.14-2.86)	0.162
miR-1290				
Low	1		1	
High	2.87 (1.83-4.50)	<0.001[*]	1.48 (0.85-2.90)	0.008[*]
MMR status				
dMMR	1		1	
pMMR	0.44 (0.27-0.71)	0.001[*]	0.51 (0.37-0.93)	0.021[*]

HR: Hazard ratio;   CI: Confidence interval

*P<0.05 was considered significant

Supplementary Table S5. Univariate and multivariate Cox proportional hazard models for disease free survival (DFS)

	Disease free survival (DFS)			
	Univariate		Multivariate	
	HR (95% CI)	P	HR (95% CI)	P
Age				
<65 y	1			
≥65 y	1.54 (0.97-2.43)	0.068	-	
Gender				
Male	1			
Female	1.26 (0.81-1.97)	0.316	-	
Location				
Right	1			
Transverse	1.15 (0.89-1.49)	0.292	-	
Left	0.62 (0.34-1.02)	0.461		
T stage				
T1+T2	1			
T3+T4	1.61 (0.51-5.09)	0.421	-	
N stage				
N0	1		1	
N1+N2	6.54 (3.81-11.22)	<0.001*	4.29 (2.32-7.61)	<0.001*
AJCC stage				
II	1		1	
III	6.54 (3.81-11.22)	<0.001*	4.29 (2.32-7.61)	<0.001*
Differentiation				
Well	1		1	
Poor	2.92 (1.80-4.72)	<0.001*	2.14 (1.15-3.48)	0.182
Vascular invasion				
No	1		1	
Yes	6.32 (3.31-12.08)	<0.001*	3.15 (2.32-6.71)	0.351*
miR-1290				
Low	1		1	
High	2.84 (1.78-4.53)	<0.001*	1.59 (1.32-2.95)	0.016*
MMR status				
dMMR	1		1	
pMMR	0.45 (0.27-0.74)	0.002*	0.43 (0.21-0.87)	0.018*

HR: Hazard ratio;   CI: Confidence interval

*P<0.05 was considered significant