

Supporting Information

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Escherichia coli-Induced cGLIS3-Mediated Stress Granules Activate the NF- κ B Pathway to Promote Intrahepatic Cholangiocarcinoma Progression

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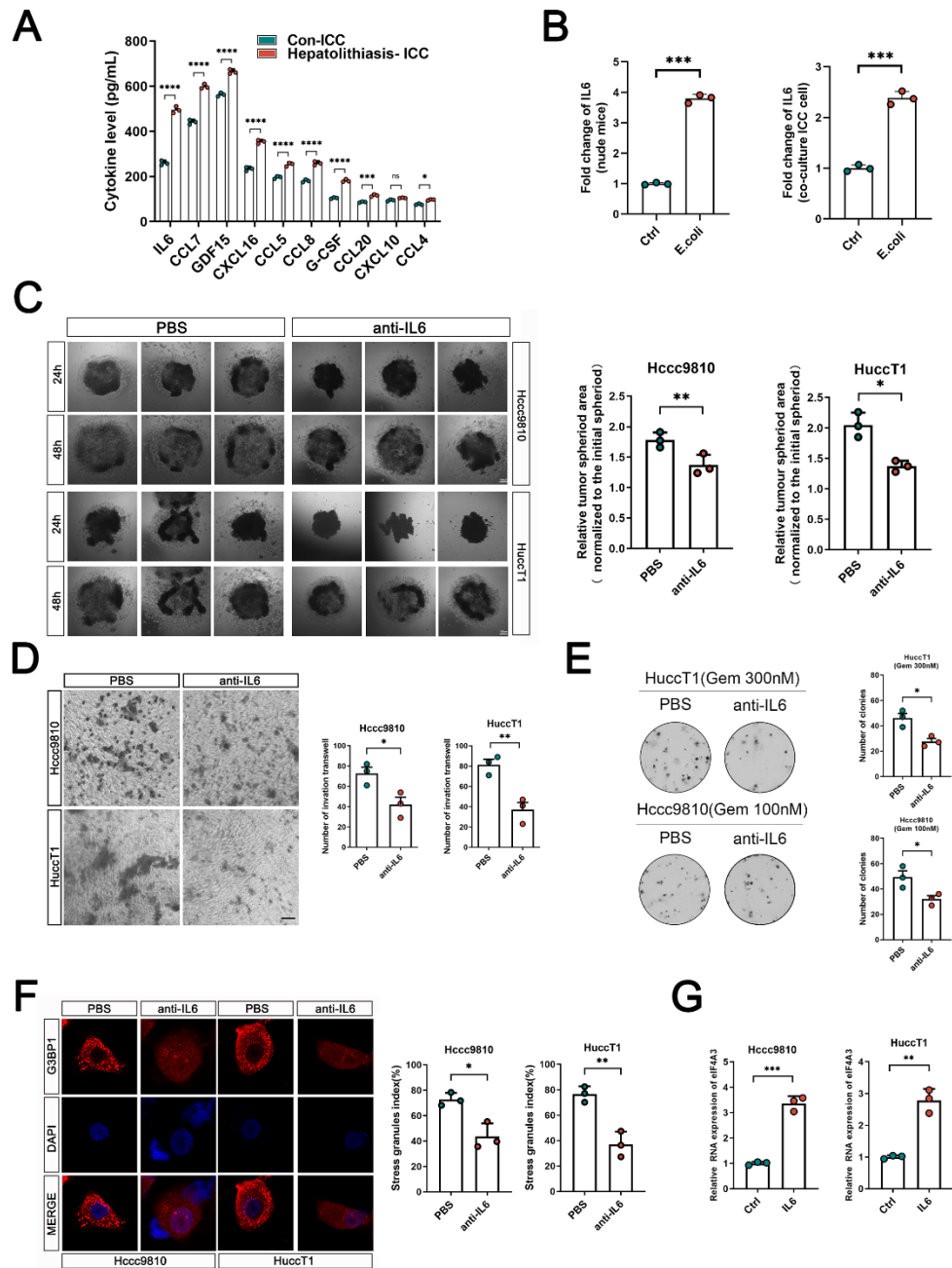


Figure S1

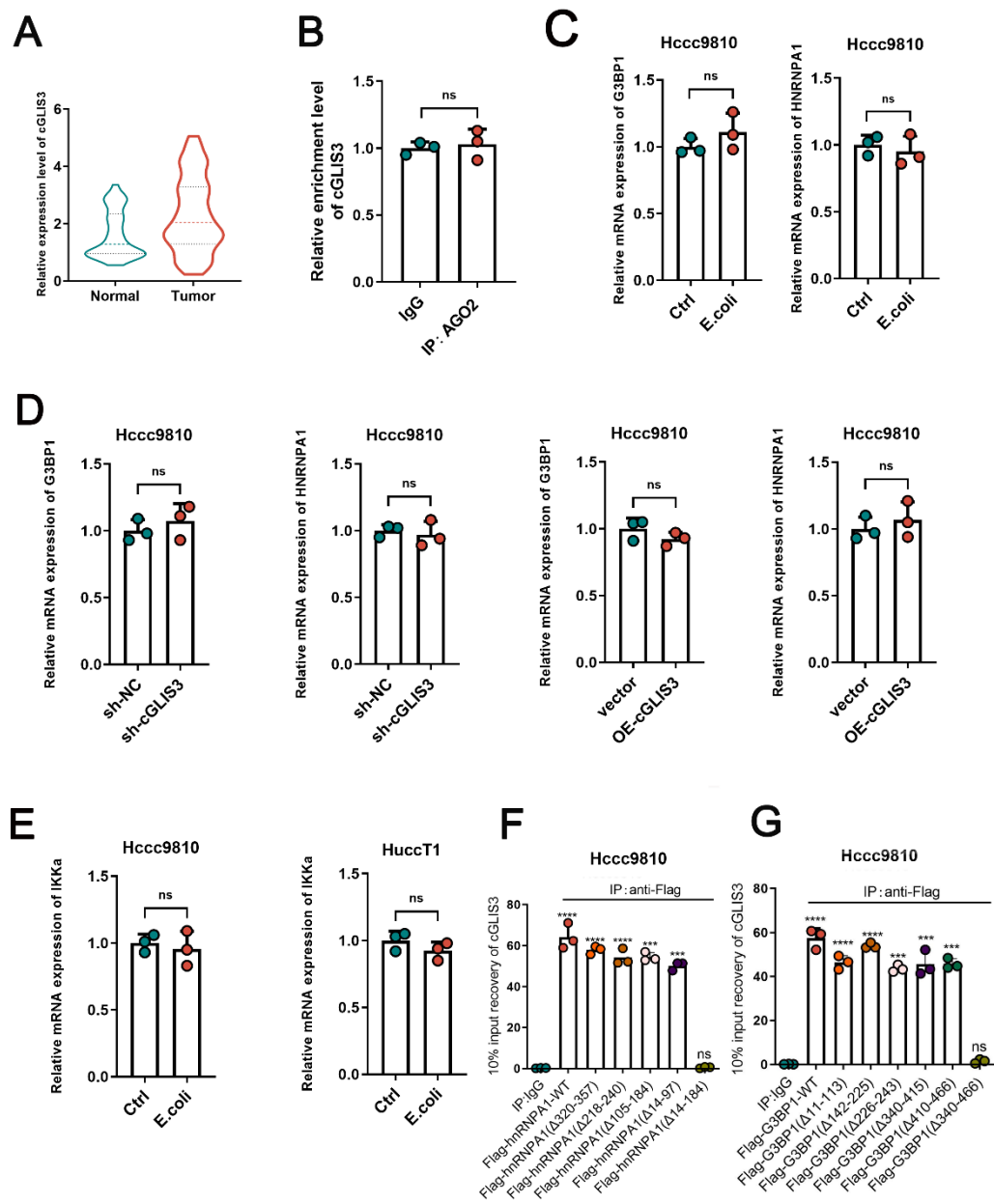


Figure S2

Figure S1 The anti-IL6 partially inhibits the progression-promoting effects of E.coli.

A. Changes in cytokines in the bile of ICC patients with hepatolithiasis or without hepatolithiasis.

B. ELISA quantification of IL-6 level of the tumors homogenate from the subcutaneous model injecting by Huccc9810 cells that pretreated with E. coli or PBS (left); ELISA quantification of IL-6 level in the co-culture medium from the indirect co-culture model between Huccc9810 cells and E.coli (Right);

C. 3D tumor migration assay of Hccc9810 and HuccT1 cells cultured with PBS or anti-IL6, after treatment with E. coli. Quantified in the right panel. Scale bar: 100 μ m.

D. Transwell assay of Hccc9810 and HuccT1 cells cultured with PBS or anti-IL6, after pretreated with E. coli. quantified in the right panel.

E. Colony formation assay of Hccc9810 and HuccT1 cells cultured with PBS or anti-IL6, after pretreated with E. coli and the numbers of colonies are summarized on the right.

F. The percentage of cells with stress granules (G3BP1+) of Hccc9810 and HuccT1 cells cultured with PBS or anti-IL6, after pretreated with E. coli.

G. qRT-PCR detection of relative mRNA expression of eIF4A3 in Hccc9810 and HuccT1 cells treated with IL-6 or PBS.

Figure S2 Relationship between cGLIS3 and hnRNPA1/G3BP1

A. Expression levels of cGLIS3 were examined between ICC tumor tissue and normal tissue.

B. The interaction of cGLIS3 and AGO2 based on RIP experiment.

C. The coding potential of cGLIS3 was predicted based on the circRNAD database.

D. Effect of overexpression or knockdown of cGLIS3 on hnRNPA1/G3BP1 mRNA level, as shown by the qPCR experiment.

E. Effect of pretreated with E. coli or PBS on IKKA mRNA level of the Hccc9810 and HuccT1 cells, as shown by the qPCR experiment.

F. Binding of the Full-length or different hnRNPA1 truncations and cGLIS3, RIP experiment was performed using anti-flag.

G. Binding of the Full-length or different G3BP1 truncations and cGLIS3, RIP experiment was performed using anti-flag.

Table S1 . Baseline characteristics of patients with ICC according to cGLIS3 expression levels.

Characteristic	cGLIS3 low-expression n=59	cGLIS3 high-expression n=59	p value
Sex			0.854
male	31(52.5)	32(54.2)	
female	28(47.5)	27(45.8)	
Age			0.853
<60	26(44.1)	27(45.8)	
≥60	33(55.9)	32(54.2)	
BMI			0.847
<25	39(66.1)	38(64.4)	
≥25	20(33.9)	21(35.6)	
Hepatolithiasis			<0.001
no	48(81.4)	17(28.8)	
yes	11(18.6)	42(71.2)	
Bile culture positive	9(15.3)	36(61.0)	<0.001
<i>E.Coli</i> positive	8(13.6)	33(55.9)	<0.001
CA19-9, UI/mL	93.5(53.9-139.1)	151.7(83.1-283.9)	<0.001
Differentiation			<0.001
well	8(13.6)	4(6.8)	
moderate	39(66.1)	19(32.2)	
poor	12(20.3)	36(61.0)	
vascular invasion	25(42.4)	36(61.0)	0.043
Tumor number			0.018
single	55(93.2)	46(78.0)	
multiple	4(6.8)	13(22.0)	
Tumor size, cm	4.5(3.6-5.7)	5.8(4.6-6.7)	<0.001
Lymph node metastasis	32(54.2)	49(83.1)	0.001
Distant metastasis	3(5.1)	13(22.0)	0.007
AJCC			0.003
I	12(20.3)	3(5.1)	
II	13(22.0)	7(11.9)	
III	31(52.5)	36(61.0)	
IV	3(5.1)	13(22.0)	

Table S2. Univariate and multivariate analysis for PFS.

Variables	Univariate		Multivariate	
	OR(95%CI)	p value	OR(95%CI)	p value
Sex				
male	REF	0.481		
female	1.154(0.775-1.717)			
Age		0.267		
<60	REF			
≥60	1.256(0.839-1.880)			
BMI		0.434		
<25	REF			
≥25	1.178(0.781-1.776)			
Hepatolithiasis		0.001		0.631
no	REF			
yes	2.042(1.356-3.075)			
Bile culture positive	2.562(1.669-3.932)	<0.001		
<i>Escherichia coli</i>	2.683(1.735-4.149)	<0.001	1.875(1.187-2.961)	0.007
<i>Klebsiella pneumoniae</i>	1.506(0.833-2.723)	0.175		
<i>Enterococcus</i>	1.324(0.611-2.870)	0.476		
<i>Staphy</i>	1.324(0.611-2.870)	0.396		
CA19-9, UI/mL		0.005		0.526
<100	REF			
≥100	1.791(1.191-2.693)			
Differentiation		0.048		0.837
well	REF			
moderate	1.623(0.816-3.227)			
poor	2.283(1.130-4.609)			
vascular invasion		0.066		
no	REF			
yes	1.453(0.975-2.165)			
AJCC		0.048		0.007
I	REF			
II	1.586(0.726-3.466)		1.526(0.697-3.341)	0.29
III	3.259 (1.657-6.412)		2.888(1.452-5.745)	0.003
IV	46.433(18.061-119.377)		35.177(13.405-92.310)	<0.001

Table S3. Univariate and multivariate analysis for OS.

Variables	Univariate		Multivariate	
	OR(95%CI)	p value	OR(95%CI)	p value
Sex				

female	REF	0.701		
male	1.088(0.708-1.671)			
Age		0.36		
<60	REF			
≥60	1.226(0.792-1.898)			
BMI		0.458		
<25	REF			
≥25	1.183(0.759-1.845)			
cGLIS3 expression		0.008		0.449
low-expression	REF			
high-expression	1.745(1.170-2.603)			
Hepatolithiasis		0.002		0.108
no	REF			
yes	2.000(1.286-3.110)			
Bile culture assay	2.489(1.586-3.905)	<0.001		
<i>E.Coli positive</i>	2.468(1.567-3.885)	<0.001		0.069
<i>K. pneumoniae positive</i>	1.227(0.649-2.321)	0.529		
<i>Enterococcus positive</i>	1.021(0.443-2.352)	0.961		
<i>Staphy positive</i>	1.777(0.648-4.871)	0.264		
CA19-9, UI/mL		0.001		0.104
<100	REF			
≥100	2.083(1.329-3.262)			
Differentiation		0.151		
well	REF			
moderate	1.382(0.647-2.953)	0.404		
poor	1.948(0.897-4.232)	0.092		
vascular invasion		0.074		
no	REF			
yes	1.485(0.962-2.291)			
AJCC		<0.001		
I	REF		REF	
II	1.622(0.636-4.137)	0.311	1.622(0.636-4.137)	0.311
III	3.598(1.608-8.050)	0.002	3.598(1.608-8.050)	0.002
IV	60.210(20.349-178.157)	<0.001	60.210(20.349-178.157)	<0.001

Table S4. The sequences of all plasmids

Name	Sequence (5'- 3')
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cGLIS3-WT	GCTTATAACCCACACCATGGATAACTTATTGGACTTTGCCTGAAAGGAGT TGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTTCAGAATGAATGC ATGCAGCATGAGTCTCCACCGGACATCGGGAACCCACAGGGGCCTAG AGTGGTCATCACATTCCTGCCATCCGAGCCCACTCCGGGACTCCTGGCC CTGTGGCAGCACATCGAGTCCCACTATGGCAAGCCTTGCTAACAACCTC AGATGCCCTCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGA TCCATCTGCCTGCCTTAAGCCCCAGGAGACAAATGCTCACCAATGGGAA ATTCCAGGTCACCCAGGCTGGAGGCATGTCAGGGTCACATACTTTAAAC CAGCAGGAGTTTGGAAGCCCTTTTCCTCCAAATCCTGGGAAAG
cGLIS3-HR1-mut	GCTTATAACCCACACCATGGATAACTTATTGGACTTTGCCTGAAAGGA GTCATTAGTGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTTCA GAATGAATGGAAGATCATGCAGCATGAGTCTCCACCGGACATCGGGA ACCCACAGGGGCCTAGGATGGTCAGTGGTCATCACATTCCTGCCATC CGAGCCCACTCCGGGACTCCTGGCCCCCTCGCCCTGTGGCAGCACATC GAGTCCCACTATGGCAAGCCTTGCTAACAACCTCCATCTCAAGATGCC CTCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGAGCCGC ATCCATCTGCCTGCCTTAAGCCCCAGGAGACAAATGCTCACCAATGGG AAGCCGCGATTCCAGGTCACCCAGGCTGGAGGCATGTCAGGGTCACA TACTTGCCCTAACCCTACTACTGAGTTTGGAAGCCCTTTTCCTCCAAA TCCTGGGAAAG
cGLIS3-HR2-mut	GCTTATAACCCACACCATGGATAACTTATTGGACTTTGCCTGAAAGGA GTCATTAGTGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTTCA GAATGAATGGAAGATCATGCAGCATGAGTCTCCACCGGACATCGGGA ACCCACAGGGGCCTAGGATGGTCAGTGGTCATCACATTCCTGCCATC CGAGCCCACTCCGGGACTCCTGGCCCCCTCGCCCTGTGGCAGCACATC GAGTCCCACTATGGCAAGCCTTGCTAACAACCTCCATCTCAAGATGCC CTCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGAGCCTA CGAACGAGTAAGTAAGGCCTAAAACTTCTCACCCGTAGACAACCGTT TCCTAATATCGGAACTTGACCCCAAGGCTGGAGGCATGTCAGGGTCAC ATACTTTAAAGCCAAAGCAGCAGGAGTTTGGAAGCCCTTTTCCTCCA AATCCTGGGAAAG
cGLIS3-HR3-mut	TAGGCGCCAAACACAACGTTCGCCAGGCGGTTCAAGGGTAATGAAAG GAGTCATTAGTGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTT CAGAATGAATGGAAGATCATGCAGCATGAGTCTCCACCGGACATCGG GAACCCACAGGGGCCTAGGATGGTCAGTGGTCATCACATTCCTGCC ATCCGAGCCCACTCCGGGACTCCTGGCCCCCTCGCCCTGTGGCAGCAC ATCGAGTCCCACTATGGCAAGCCTTGCTAACAACCTCCATCTCAAGAT GCCCTCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGAGC CGCATCCATCTGCCTGCCTTAAGCCCCAGGAGACAAATGCTCACCAAT GGGAAGCCGCGATTCCAGGTCACCCAGGCTGGAGGCATGTCAGGGTC ACATACTTTAAAGCCAAAGCAGCAGGAGTTTGGAAGCCCTTTTCCTC CAAATCCTGGTCCCT

cGLIS3-HR4-mut	GCTTATAACCCACACCATGGATAACTTATTGGACTTTGCCTGAAAGGA GTCATTAGTGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTTCA GAATGAATGGAAGATCATGCAGCATGAGTCTCCACCGGACATCGGGA ACCCACAGGGGCCTAGGATGGTCAGTGGTCATCACATTCTGCCATC CGAGCCCACTCCGGGACTCCTGGCCCCCTCGCCCTGTGGCAGCACATC GAGTCCCACTATGGCAAGCCTTGCTAACAACCTCCATCTCAATCGTAA ATCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGAGCCGC ATCCATCTGCCTGCCTTAAGCCCCAGGAGACAAATGCTCACCAATGGG AAGCCGCGATTCCAGGTCACCCAGGCTGGAGGCATGTCAGGGTCACA TACTTTAAAGCCAAAGCAGCAGGAGTTTGGAAGCCCTTTTCCTCCAA ATCCTGGGAAAG
cGLIS3-HR5-mut	GCTTATAACCCACACCATGGATAACTTATTGGACTTTGCCTGAAAGGA GTCATTAGTGACATTGGATATTTGACCGTCTTGGCCACAGGTTTTTCA GAATGAATGGAAGATCATGCAGCATGAGTCTCCACCGGACATCGGGA ACCCACAGGGGCCTAGGATGGTCATGTTGACGACACGGAATGCCAT CCGAGCCCACTCCGGGACTCCTGGCCCCCTCGCCCTGTGGCAGCACAT CGAGTCCCACTATGGCAAGCCTTGCTAACAACCTCCATCTCAAGATGC CCTCAGGAGGAGGGATGGCTCCTCAGAACAACGTGGCTGAGAGCCG CATCCATCTGCCTGCCTTAAGCCCCAGGAGACAAATGCTCACCAATGG GAAGCCGCGATTCCAGGTCACCCAGGCTGGAGGCATGTCAGGGTCAC ATACTTTAAAGCCAAAGCAGCAGGAGTTTGGAAGCCCTTTTCCTCCA AATCCTGGGAAAG
hnRNP A1(del3 20-357aa)	ATGTCTAAGTCAGAGTCTCCTAAAGAGCCCGAACAGCTGAGGAAGCT CTTCATTGGAGGGTTGAGCTTTGAAACAACCTGATGAGAGCCTGAGGA GCCATTTTGAGCAATGGGGAACGCTCACGGACTGTGTGGTAATGAGA GATCCAAACACCAAGCGCTCCAGGGGCTTTGGGTTTGTACATATGCC ACTGTGGAGGAGGTGGATGCAGCTATGAATGCAAGGCCACACAAGGT GGATGGAAGAGTTGTGGAACCAAAGAGAGCTGTCTCCAGAGAAGAT TCTCAAAGACCAGGTGCCCACTTAACTGTGAAAAAGATATTTGTTGGT GGCATTAAGAAGACACTGAAGAACATCACCTAAGAGATTATTTTGA ACAGTATGGAAAAATTGAAGTGATTGAAATCATGACTGACCGAGGCA GTGGCAAGAAAAGGGGCTTTGCCTTTGTAACCTTTGACGACCATGAC TCCGTGGATAAGATTGTCATTCAGAAATACCATACTGTGAATGGCCAC AACTGTGAAGTTAGAAAAGCCCTGTCAAAGCAAGAGATGGCTAGTGC TTCATCCAGCCAAAGAGGTGCAAGTGGTTCTGGAAACTTTGGTGGTG GTCGTGGAGGTGGTTTCGGTGGGAATGACAACTTCGGTCGTGGAGGA AACTTCAGTGGTCGTGGTGGCTTTGGTGGCAGCCGTGGTGGTGGTGG ATATGGTGGCAGTGGGGATGGCTATAATGGATTGTAATGATGGTGG TTATGGAGGAGGCGGCCCTGGTTACTCTGGAGGAAGCAGAGGCTATG GAAGTGGTGGACAGGGTTATGGAAACCAGGGCAGTGGCTATGGCGG GAGTGGCAGCTATGACAGCTATAACAACGGAGGCGGAGGCGGCTTTG GCGGTGGTAGTGGAAGCAATTTTGGAGGTGGTGGAAAGCTACAATGAT TTTGGGAATTACAACGGCGGTTCCAGCAGCAGCAGTAGCTATGGCAG TGGCAGAAGATTTTAA

hnRNP A1(del2 18- 240aa)	ATGTCTAAGTCAGAGTCTCCTAAAGAGCCCGAACAGCTGAGGAAGCT CTTCATTGGAGGGTTGAGCTTTGAAACAACCTGATGAGAGCCTGAGGA GCCATTTTGAGCAATGGGGAACGCTCACGGACTGTGTGGTAATGAGA GATCCAAACACCAAGCGCTCCAGGGGCTTTGGGTTTGTACATATGCC ACTGTGGAGGAGGTGGATGCAGCTATGAATGCAAGGCCACACAAGGT GGATGGAAGAGTTGTGGAACCAAAGAGAGCTGTCTCCAGAGAAGAT TCTCAAAGACCAGGTGCCCACTTAACTGTGAAAAAGATATTTGTTGGT GGCATTAAAGAAGACACTGAAGAACATCACCTAAGAGATTATTTTGA ACAGTATGGAAAAATTGAAGTGATTGAAATCATGACTGACCGAGGCA GTGGCAAGAAAAAGGGGCTTTGCCTTTGTAACTTTGACGACCATGAC TCCGTGGATAAGATTGTCATTGAGAAATACCATACTGTGAATGGCCAC AACTGTGAAGTTAGAAAAGCCCTGTCAAAGCAAGAGATGGCTAGTGCT TTCATCCAGCCAAAGAGGTCGAAGTGGTTCTGGAACTTTGGTGGTG GTCGTGGAGGTGGTTTCGGTGGGAATGACAACTTCGGTGGGGATGGC TATAATGGATTTGGTAATGATGGTGGTTATGGAGGAGGCGGCCCTGGT TACTCTGGAGGAAGCAGAGGCTATGGAAGTGGTGGACAGGGTTATGG AAACCAGGGCAGTGGCTATGGCGGGAGTGGCAGCTATGACAGCTATA ACAACGGAGGCGGAGGCGGCTTTGGCGGTGGTAGTGGAAGCAATTTT GGAGGTGGTGGAAAGCTACAATGATTTTGGGAATTACAACAATCAGTC TTCAAATTTTGGACCCATGAAGGGAGGAAATTTTGGAGGCAGAAGCT CTGGCCCCTATGGCGGTGGAGGCCAATACTTTGCAAAACCACGAAAC CAAGGTGGCTATGGCGGTTCCAGCAGCAGCAGTAGCTATGGCAGTGG CAGAAGATTTTAA
hnRNP A1(del1 05- 184aa)	ATGTCTAAGTCAGAGTCTCCTAAAGAGCCCGAACAGCTGAGGAAGCT CTTCATTGGAGGGTTGAGCTTTGAAACAACCTGATGAGAGCCTGAGGA GCCATTTTGAGCAATGGGGAACGCTCACGGACTGTGTGGTAATGAGA GATCCAAACACCAAGCGCTCCAGGGGCTTTGGGTTTGTACATATGCC ACTGTGGAGGAGGTGGATGCAGCTATGAATGCAAGGCCACACAAGGT GGATGGAAGAGTTGTGGAACCAAAGAGAGCTGTCTCCAGAGAAGAT TCTCAAAGACCAGGTGCCCACTTAACTGTGGAGATGGCTAGTGCTTC ATCCAGCCAAAGAGGTCGAAGTGGTTCTGGAACTTTGGTGGTGGTC GTGGAGGTGGTTTCGGTGGGAATGACAACTTCGGTCGTGGAGGAAA CTTCAGTGGTTCGTGGTGGCTTTGGTGGCAGCCGTGGTGGTGGTGGAT ATGGTGGCAGTGGGGATGGCTATAATGGATTTGGTAATGATGGTGGTT ATGGAGGAGGCGGCCCTGGTTACTCTGGAGGAAGCAGAGGCTATGGA AGTGGTGGACAGGGTTATGGAACCAGGGCAGTGGCTATGGCGGGA GTGGCAGCTATGACAGCTATAACAACGGAGGCGGAGGCGGCTTTGGC GGTGGTAGTGGAAGCAATTTTGGAGGTGGTGGAAAGCTACAATGATTT TGGGAATTACAACAATCAGTCTTCAAATTTTGGACCCATGAAGGGAG GAAATTTTGGAGGCAGAAGCTCTGGCCCCTATGGCGGTGGAGGCCAA TACTTTGCAAAACCACGAAACCAAGGTGGCTATGGCGGTTCCAGCAG CAGCAGTAGCTATGGCAGTGGCAGAAGATTTTAA

hnRNP A1(del1 4-97aa)	ATGTCTAAGTCAGAGTCTCCTAAAGAGCCCGAACAGCTGCCAGGTGC CCTTAACTGTGAAAAAGATATTTGTTGGTGGCATTAAAGAAGACAC TGAAGAACATCACCTAAGAGATTATTTTGAACAGTATGGAAAAATTGA AGTGATTGAAATCATGACTGACCGAGGCAGTGGCAAGAAAAGGGGC TTTGCCCTTTGTAACCTTTGACGACCATGACTCCGTGGATAAGATTGTC ATTCAGAAATACCATACTGTGAATGGCCACAACCTGTGAAGTTAGAAA AGCCCTGTCAAAGCAAGAGATGGCTAGTGCTTCATCCAGCCAAAGAG GTCGAAGTGGTTCTGGAACTTTGGTGGTGGTCGTGGAGGTGGTTTC GGTGGGAATGACAACTTCGGTCGTGGAGGAACTTCAGTGGTCGTGG TGGCTTTGGTGGCAGCCGTGGTGGTGGTGGATATGGTGGCAGTGGGG ATGGCTATAATGGATTTGGTAATGATGGTGGTTATGGAGGAGGCGGCC CTGGTTACTCTGGAGGAAGCAGAGGCTATGGAAGTGGTGGACAGGGT TATGGAAACCAGGGCAGTGGCTATGGCGGGAGTGGCAGCTATGACAG CTATAACAACGGAGGCGGAGGCGGCTTTGGCGGTGGTAGTGGAAGCA ATTTTGGAGGTGGTGGAAAGCTACAATGATTTTGGGAATTACAACAATC AGTCTTCAAATTTTGGACCCATGAAGGGAGGAAATTTTGGAGGCAGA AGCTCTGGCCCCTATGGCGGTGGAGGCCAATACTTTGCAAAACCACG AAACCAAGGTGGCTATGGCGGTTCCAGCAGCAGCAGTAGCTATGGCA GTGGCAGAAGATTTTAA
hnRNP A1(del1 4- 184aa)	ATGTCTAAGTCAGAGTCTCCTAAAGAGCCCGAACAGCTGGAGATGGC TAGTGCTTCATCCAGCCAAAGAGGTCGAAGTGGTTCTGGAACTTTG GTGGTGGTCGTGGAGGTGGTTTCGGTGGGAATGACAACTTCGGTCGT GGAGGAACTTCAGTGGTCGTGGTGGCTTTGGTGGCAGCCGTGGTGG TGGTGGATATGGTGGCAGTGGGGATGGCTATAATGGATTTGGTAATGA TGGTGGTTATGGAGGAGGCGGCCCTGGTTACTCTGGAGGAAGCAGAG GCTATGGAAGTGGTGGACAGGGTTATGGAACCAGGGCAGTGGCTAT GGCGGGAGTGGCAGCTATGACAGCTATAACAACGGAGGCGGAGGCG GCTTTGGCGGTGGTAGTGGAAGCAATTTTGGAGGTGGTGGAAAGCTAC AATGATTTTGGGAATTACAACAATCAGTCTTCAAATTTTGGACCCATG AAGGGAGGAAATTTTGGAGGCAGAAAGCTCTGGCCCCTATGGCGGTGG AGGCCAATACTTTGCAAAACCACGAAACCAAGGTGGCTATGGCGGTT CCAGCAGCAGCAGTAGCTATGGCAGTGGCAGAAGATTTTAA

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G3BP1(del142- 225aa)	ATGGTGATGGAGAAGCCTAGTCCCCTGCTGGTTCGGGCGGGAATTTGT GAGACAGTATTACACACTGCTGAACCAGGCCCCAGACATGCTGCATA GATTTTATGGAAAGAACTCTTCTTATGTCCATGGGGGATTGGATTCAA ATGGAAAGCCAGCAGATGCAGTCTACGGACAGAAAGAAATCCACAG GAAAGTGATGTCACAAAACCTCACCAACTGCCACACCAAGATTCGCC ATGTTGATGCTCATGCCACGCTAAATGATGGTGTGGTAGTCCAGGTGA TGGGGCTTCTCTCTAACAACAACCAGGCTTTGAGGAGATTCATGCAA ACGTTTGTCTTGCTCCTGAGGGGTCTGTTGCAAATAAATTCTATGTT ACAATGATATCTTCAGATACCAAGATGAGGTCTTTGGTGGGTTTGATG CTCAGAAGAGTTCTTCTCCAGCACCTGCAGACATAGCTCAGACAGTA CAGGAAGACTTGAGGACATTTTCTTGGGCATCTGTGACCAGTAAGAA TCTTCCACCCAGTGGAGCTGTTCCAGTTACTGGGATACCACCTCATGT TGTTAAAGTACCAGCTTCACAGCCCCGTCCAGAGTCTAAGCCTGAAT CTCAGATTCCACCACAAAGACCTCAGCGGGATCAAAGAGTGCGAGA ACAACGAATAAATATTCCTCCCCAAAGGGGACCCAGACCAATCCGTG AGGCTGGTGAGCAAGGTGACATTGAACCCCGAAGAATGGTGAGACA CCCTGACAGTCACCAACTCTTCATTGGCAACCTGCCTCATGAAGTGG ACAAATCAGAGCTTAAAGATTTCTTTCAAAGTTATGGAAACGTGGTG GAGTTGCGCATTAACAGTGGTGGGAAATTACCCAATTTTGGTTTTGTT GTGTTTGATGATTCTGAGCCTGTTTCAAGAAAGTCCTTAGCAACAGGCC ATCATGTTTCAAGAGGTGAGGTCCGTCTGAATGTCGAAGAGAAGAAGAC TCGAGCTGCCAGGGAAGGCGACCGACGAGATAATCGCCTTCGGGGAC CTGGAGGCCCTCGAGGTGGGCTGGGTGGTGGAATGAGAGGCCCTCC CCGTGGAGGCATGGTGCAGAAACCAGGATTTGGAGTGGGAAGGGGG CTTGCGCCACGGCAGTGA

G3BP1(del226- 243aa)	ATGGTGATGGAGAAGCCTAGTCCCCTGCTGGTCGGGCGGGAATTTGT GAGACAGTATTACACACTGCTGAACCAGGCCCCAGACATGCTGCATA GATTTTATGGAAAGAACTCTTCTTATGTCCATGGGGGATTGGATTCAA ATGGAAAGCCAGCAGATGCAGTCTACGGACAGAAAGAAATCCACAG GAAAGTGATGTCACAAAACCTTCACCAACTGCCACACCAAGATTCGCC ATGTTGATGCTCATGCCACGCTAAATGATGGTGTGGTAGTCCAGGTGA TGGGGCTTCTCTCTAACAACAACCAGGCTTTGAGGAGATTCATGCAA ACGTTTGTCTTGCTCCTGAGGGGTCTGTTGCAAATAAATTCTATGTT ACAATGATATCTTCAGATACCAAGATGAGGTCTTTGGTGGGTTTGTCA CTGAGCCTCAGGAGGAGTCTGAAGAAGAAGTAGAGGAACCTGAAGA AAGACAGCAAACACCTGAGGTGGTACCTGATGATTCTGGAACCTTCT ATGATCAGGCAGTTGTCTAGTAATGACATGGAAGAACATTTAGAGGAG CCTGTTGCTGAACCAGAGCCTGATCCTGAACCAGAACCAGAACAAAG AACCTGTATCTGAAATCCAAGAGGAAAAGCCTGAGCCAGTATTAGAA GAAACTGCCCCTGAGGAAGACTTGAGGACATTTTCTTGGGCATCTGT GACCAGTAAGAATCTTCCACCCAGTGGAGCTGTTCCAGTTACTGGGA TACCACCTCATGTTGTAAAGTACCAGCTTCACAGCCCCGTCCAGAGT CTAAGCCTGAATCTCAGATTCCACCACAAAGACCTCAGCGGGATCAA AGAGTGCGAGAACAACGAATAAATATTCCTCCCCAAAGGGGACCCAG ACCAATCCGTGAGGCTGGTGAGCAAGGTGACATTGAACCCCGAAGA ATGGTGAGACACCCTGACAGTCACCAACTCTTCATTGGCAACCTGCC TCATGAAGTGGACAAATCAGAGCTTAAAGATTTCTTTCAAAGTTATGG AAACGTGGTGGAGTTGCGCATTAACAGTGGTGGGAAATTACCCAATT TTGGTTTTGTTGTGTTTGATGATTCTGAGCCTGTTTCAAGAAAGTCCTTA GCAACAGGCCCATCATGTTTCAAGAGGTGAGGTCCGTCTGAATGTCGAA GAGAAGAAGACTCGAGCTGCCAGGGAAGGCGACCGACGAGATAATC GCCTTCGGGGACCTGGAGGCCCTCGAGGTGGGCTGGGTGGTGGGAAT GAGAGGCCCTCCCCGTGGAGGCATGGTGCAGAAACCAGGATTTGGA GTGGGAAGGGGGCTTGCGCCACGGCAGTGA
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G3BP1(del340- 415aa)	ATGGTGATGGAGAAGCCTAGTCCCCTGCTGGTCGGGCGGGAATTTGT GAGACAGTATTACACACTGCTGAACCAGGCCCCAGACATGCTGCATA GATTTTATGGAAAGAACTCTTCTTATGTCCATGGGGGATTGGATTCAA ATGGAAAGCCAGCAGATGCAGTCTACGGACAGAAAGAAATCCACAG GAAAGTGATGTCACAAAACCTTCACCAACTGCCACACCAAGATTCGCC ATGTTGATGCTCATGCCACGCTAAATGATGGTGTGGTAGTCCAGGTGA TGGGGCTTCTCTCTAACAACAACCAGGCTTTGAGGAGATTCATGCAA ACGTTTGTCTTGCTCCTGAGGGGTCTGTTGCAAATAAATTCTATGTT ACAATGATATCTTCAGATACCAAGATGAGGTCTTTGGTGGGTTTGTCA CTGAGCCTCAGGAGGAGTCTGAAGAAGAAGTAGAGGAACCTGAAGA AAGACAGCAAACACCTGAGGTGGTACCTGATGATTCTGGAACCTTCT ATGATCAGGCAGTTGTCTAGTAATGACATGGAAGAACATTTAGAGGAG CCTGTTGCTGAACCAGAGCCTGATCCTGAACCAGAACCAGAACAAAG AACCTGTATCTGAAATCCAAGAGGAAAAGCCTGAGCCAGTATTAGAA GAAACTGCCCCCTGAGGATGCTCAGAAGAGTTCTTCTCCAGCACCTGC AGACATAGCTCAGACAGTACAGGAAGACTTGAGGACATTTTCTTGGG CATCTGTGACCAGTAAGAATCTTCCACCCAGTGGAGCTGTTCCAGTTA CTGGGATACCACCTCATGTTGTTAAAGTACCAGCTTCACAGCCCCGTC CAGAGTCTAAGCCTGAATCTCAGATTCCACCACAAAGACCTCAGCGG GATCAAAGAGTGCGAGAACAACGAATAAATATTCCTCCCCAAAGGGG ACCCAGACCAATCCGTGAGGCTGGTGAGCAAGGTGACATTGAACCCC GAAGAATGGTGAGACACCCTGACAGTCGAGCTGCCAGGGAAGGCGA CCGACGAGATAATCGCCTTCGGGGACCTGGAGGCCCTCGAGGTGGGC TGGGTGGTGGAATGAGAGGCCCTCCCCGTGGAGGCATGGTGCAGAA ACCAGGATTTGGAGTGGGAAGGGGGCTTGCGCCACGGCAGTGA
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G3BP1(del410- 466aa)	ATGGTGATGGAGAAGCCTAGTCCCCTGCTGGTCGGGCGGGAATTTGT GAGACAGTATTACACACTGCTGAACCAGGCCCCAGACATGCTGCATA GATTTTATGGAAAGAAGCTCTTCTTATGTCCATGGGGGATTGGATTCAA ATGGAAAGCCAGCAGATGCAGTCTACGGACAGAAAGAAATCCACAG GAAAGTGATGTCACAAAACCTTCACCAACTGCCACACCAAGATTTCGCC ATGTTGATGCTCATGCCACGCTAAATGATGGTGTGGTAGTCCAGGTGA TGGGGCTTCTCTCTAACAACAACCAGGCTTTGAGGAGATTCATGCAA ACGTTTGTCTTGCTCCTGAGGGGTCTGTTGCAAATAAATTCTATGTTT ACAATGATATCTTCAGATACCAAGATGAGGTCTTTGGTGGGTTTGTCA CTGAGCCTCAGGAGGAGTCTGAAGAAGAAGTAGAGGAACCTGAAGA AAGACAGCAAACACCTGAGGTGGTACCTGATGATTCTGGAACCTTCT ATGATCAGGCAGTTGTCTAGTAATGACATGGAAGAACATTTAGAGGAG CCTGTTGCTGAACCAGAGCCTGATCCTGAACCAGAACCAGAACAAG AACCTGTATCTGAAATCCAAGAGGAAAAGCCTGAGCCAGTATTAGAA GAAACTGCCCCTGAGGATGCTCAGAAGAGTTCTTCTCCAGCACCTGC AGACATAGCTCAGACAGTACAGGAAGACTTGAGGACATTTTCTTGGG CATCTGTGACCAGTAAGAATCTTCCACCCAGTGGAGCTGTTCCAGTTA CTGGGATACCACTCATGTTGTTAAAGTACCAGCTTCACAGCCCCGTC CAGAGTCTAAGCCTGAATCTCAGATTCCACCACAAAGACCTCAGCGG GATCAAAGAGTGCGAGAACAACGAATAAATATTCCTCCCCAAAGGGG ACCCAGACCAATCCGTGAGGCTGGTGAGCAAGGTGACATTGAACCCC GAAGAATGGTGAGACACCTGACAGTCACCAACTCTTCATTGGCAAC CTGCCTCATGAAGTGGACAAATCAGAGCTTAAAGATTTCTTTCAAAGT TATGGAAACGTGGTGGAGTTGCGCATTAAACAGTGGTGGGAAATTACC CAATTTTGGTTTTGTTGTGTTTGATGATTCTGAGCCTGTTTCAGAAAGT CCTTAGCAACAGGCCCATCATGTTTCAGAGGTGAGGTCCGTCTGAATTG A
G3BP1(del340- 466aa)	ATGGTGATGGAGAAGCCTAGTCCCCTGCTGGTCGGGCGGGAATTTGT GAGACAGTATTACACACTGCTGAACCAGGCCCCAGACATGCTGCATA GATTTTATGGAAAGAAGCTCTTCTTATGTCCATGGGGGATTGGATTCAA ATGGAAAGCCAGCAGATGCAGTCTACGGACAGAAAGAAATCCACAG GAAAGTGATGTCACAAAACCTTCACCAACTGCCACACCAAGATTTCGCC ATGTTGATGCTCATGCCACGCTAAATGATGGTGTGGTAGTCCAGGTGA TGGGGCTTCTCTCTAACAACAACCAGGCTTTGAGGAGATTCATGCAA ACGTTTGTCTTGCTCCTGAGGGGTCTGTTGCAAATAAATTCTATGTTT ACAATGATATCTTCAGATACCAAGATGAGGTCTTTGGTGGGTTTGTCA CTGAGCCTCAGGAGGAGTCTGAAGAAGAAGTAGAGGAACCTGAAGA AAGACAGCAAACACCTGAGGTGGTACCTGATGATTCTGGAACCTTCT ATGATCAGGCAGTTGTCTAGTAATGACATGGAAGAACATTTAGAGGAG CCTGTTGCTGAACCAGAGCCTGATCCTGAACCAGAACCAGAACAAG AACCTGTATCTGAAATCCAAGAGGAAAAGCCTGAGCCAGTATTAGAA GAAACTGCCCCTGAGGATGCTCAGAAGAGTTCTTCTCCAGCACCTGC AGACATAGCTCAGACAGTACAGGAAGACTTGAGGACATTTTCTTGGG CATCTGTGACCAGTAAGAATCTTCCACCCAGTGGAGCTGTTCCAGTTA CTGGGATACCACTCATGTTGTTAAAGTACCAGCTTCACAGCCCCGTC CAGAGTCTAAGCCTGAATCTCAGATTCCACCACAAAGACCTCAGCGG GATCAAAGAGTGCGAGAACAACGAATAAATATTCCTCCCCAAAGGGG ACCCAGACCAATCCGTGAGGCTGGTGAGCAAGGTGACATTGAACCCC GAAGAATGGTGAGACACCTGACAGTTGA

h- Ubiquitin	ATGTACCCATACGATGTTCCAGATTACGCTATGCAGATCTTCGTGAAGA CCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCGAGTGACACC ATTGAGAATGTCAAGGCAAAGATCCAAGACAAGGAAGGCATCCCTCC TGACCAGCAGAGGTTGATCTTTGCTGGGAAACAGCTGGAAGATGGAC GCACCCTGTCTGACTACAACATCCAGAAAGAGTCCACCCTGCACCTG GTCCTCCGTCTCAGAGGTGGGTAG
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