Table 1 The GSE75214 dataset, comprising 11 normal and 97 UC samples, was used as the external validation set. In total, 222 ARGs were acquired from the Human Autophagy database

	Genes
m6A-related genes	YTHDF1, VIRMA, FMR1, METTL3, HNRNPC, RBMX, YTHDF3, HNRNPA2B1, LRPPRC, IGFBP1, IGFBP3, FTO, YTHDC1, YTHDF2, WTAP, YTHDC2, ALKBH5, IGFBP2, ZC3H13, RBM15, METTL14, RBM15B, METTL16
autophagy related genes	AMBRA1, C17orf88, EEF2K, IKBKB, NLRC4, SAR1A,APOL1, CALCOCO2, EGFR, IKBKE, NPC1, SERPINA1
	ARNT, CAMKK2, EIF2AK2, IL24, NRG1, SESN2, ARSA, CANX, EIF2AK3, IRGM, NRG2, SH3GLB1
	ARSB, CAPN1, EIF2S1, ITGA3, NRG3, SIRT1, ATF4, CAPN10, EIF4EBP1, ITGA6, P4HB, SIRT2
	ATF6, CAPN2, EIF4G1, ITGB1, PARK2, SPHK1, ATG10, CAPNS1, ERBB2, ITGB4, PARP1, SPNS1
	ATG12, CASP1, ERN1, ITPR1, PEA15, SQSTM1, ATG16L1, CASP3, ERO1L, KIAA0226, PELP1, ST13
	ATG16L2, CASP4, FADD, KIAA0652, PEX14, STK11, ATG2A, CASP8, FAM48A, KIAA0831, PEX3, TBK1
	ATG2B, CCL2, FAS, KIF5B, PIK3C3, TM9SF1, ATG3, CCR2, FKBP1A, KLHL24, PIK3R4, TMEM49
	ATG4A, CD46, FKBP1B, LAMP1, PINK1,

	TMEM74, ATG4B, CDKN1A, FOS, LAMP2, PPP1R15A, TNFSF10
	ATG4C, CDKN1B, FOXO1, MAP1LC3A, PRKAB1, TP53, ATG4D, CDKN2A, FOXO3, MAP1LC3B, PRKAR1A, TP53INP2
	ATG5, CFLAR, GAA, MAP1LC3C, PRKCD, TP63,
	ATG7, CHMP2B, GABARAP, MAP2K7, PRKCQ,
	TP73,ATG9A, CHMP4B, GABARAPL1, MAPK1, PTEN, TSC1
	ATG9B, CLN3, GABARAPL2, MAPK3, PTK6, TSC2
	ATIC, CTSB, GAPDH, MAPK8, RAB11A, TUSC1
	BAG1, CTSD, GNAI3, MAPK8IP1, RAB1A, ULK1
	BAG3, CTSL1, GNB2L1, MAPK9, RAB24, ULK2
	BAK1, CX3CL1, GOPC, MBTPS2, RAB33B, ULK3
	BAX, CXCR4, GRID1, MLST8, RAB5A, USP10
	BCL2, DAPK1, GRID2, MTMR14, RAB7A, UVRAG
	BCL2L1, DAPK2, HDAC1, MTOR, RAC1, VAMP3
	BECN1, DDIT3, HDAC6, MYC, RAF1, VAMP7
	BID, DIRAS3, HGS, NAF1, RB1, VEGFA
	BIRC5, DLC1, HIF1A, NAMPT, RB1CC1, WDFY3
	BIRC6, DNAJB1, HSP90AB1, NBR1, RELA, WDR45
	BNIP1, DNAJB9, HSPA5, NCKAP1, RGS19, WDR45L
	BNIP3, DRAM1, HSPA8, NFE2L2, RHEB, WIPI1
	BNIP3L, EDEM1, HSPB8, NFKB1, RPS6KB1, WIPI2

C12orf44, EEF2, IFNG, NKX2-3, RPTOR, ZFYVE1

Table 2 23 m6A-related genes were obtained from the published literature

m6A	ATG	cor
FMR1	ARNT	0.809037
FTO	ARNT	0.882626
LRPPRC	ARNT	0.890234
METTL14	ARNT	0.818709
METTL3	ARNT	0.80193
RBM15B	ARNT	0.850946
RBMX	ARNT	0.81994
YTHDF1	ARNT	0.897556
FTO	ATF4	0.879215
HNRNPA2B1	ATF4	0.828832
LRPPRC	ATF4	0.831973
METTL3	ATF4	0.867973
RBM15B	ATF4	0.859925
YTHDF1	ATF4	0.934389
FTO	ATF6	0.809587
HNRNPC	ATF6	0.859925
METTL14	ATF6	0.82329
METTL3	ATF6	0.801322
ALKBH5	ATG12	0.821407
FMR1	ATG12	0.892858
FTO	ATG12	0.892096
HNRNPC	ATG12	0.880761
LRPPRC	ATG12	0.862482
METTL14	ATG12	0.892701
METTL3	ATG12	0.847198
RBM15	ATG12	0.825528
RBMX	ATG12	0.877717

YTHDF1	ATG12	0.852211
ZC3H13	ATG12	0.846058
FMR1	ATG4C	0.839813
FTO	ATG4C	0.896986
LRPPRC	ATG4C	0.836648
METTL14	ATG4C	0.832936
METTL3	ATG4C	0.816045
RBM15	ATG4C	0.806751
RBMX	ATG4C	0.870204
YTHDF1	ATG4C	0.846962
ZC3H13	ATG4C	0.844213
HNRNPC	ATG5	0.807169
METTL14	ATG5	0.868263
YTHDF1	ATG7	0.803192
FTO	ATG9B	-0.80657
FTO	ATIC	0.878586
LRPPRC	ATIC	0.897257
METTL3	ATIC	0.840297
RBM15B	ATIC	0.867461
RBMX	ATIC	0.841818
YTHDF1	ATIC	0.915319
RBM15B	BAK1	0.869705
LRPPRC	BAX	0.80004
RBM15B	BAX	0.887808
FTO	BCL2L1	-0.84411
LRPPRC	BCL2L1	-0.87688
METTL14	BCL2L1	-0.84195
METTL3	BCL2L1	-0.8405
RBMX	BCL2L1	-0.8898

YTHDF1	BCL2L1	-0.81749
ZC3H13	BCL2L1	-0.80604
ALKBH5	BECN1	0.826015
FMR1	BECN1	0.811006
HNRNPC	BECN1	0.844467
LRPPRC	BECN1	0.865764
METTL14	BECN1	0.907762
RBM15B	BECN1	0.821216
FMR1	BIRC6	0.895889
FTO	BIRC6	0.855136
HNRNPA2B1	BIRC6	0.875566
LRPPRC	BIRC6	0.880263
METTL14	BIRC6	0.868648
METTL3	BIRC6	0.86615
RBM15	BIRC6	0.850148
RBMX	BIRC6	0.858777
YTHDF1	BIRC6	0.863422
ZC3H13	BIRC6	0.891106
RBM15B	BNIP1	0.890092
LRPPRC	CALCOCO2	0.851367
FTO	CASP8	-0.8038
LRPPRC	CASP8	-0.8363
RBM15B	CASP8	-0.87176
YTHDF1	CASP8	-0.83657
FTO	CD46	-0.86901
LRPPRC	CD46	-0.84199
METTL3	CD46	-0.81939
RBMX	CD46	-0.80205
YTHDF1	CD46	-0.93162

FTO	CDKN1B	0.829533
RBMX	CDKN1B	0.833525
RBM15B	DNAJB1	0.843825
FTO	DRAM1	0.80196
METTL3	DRAM1	0.813473
FTO	EEF2	0.93262
HNRNPC	EEF2	0.818069
LRPPRC	EEF2	0.896562
METTL3	EEF2	0.867769
RBM15B	EEF2	0.840685
RBMX	EEF2	0.890015
YTHDF1	EEF2	0.933973
FTO	EGFR	-0.85462
METTL3	EGFR	-0.81753
RBMX	EGFR	-0.82027
YTHDF1	EGFR	-0.82382
FTO	EIF2AK2	-0.81328
LRPPRC	EIF2AK2	-0.825
YTHDF1	EIF2AK2	-0.87688
ALKBH5	EIF2S1	0.847475
FTO	EIF2S1	0.885825
HNRNPC	EIF2S1	0.886371
LRPPRC	EIF2S1	0.816182
METTL14	EIF2S1	0.854508
METTL3	EIF2S1	0.8371
RBM15	EIF2S1	0.835075
RBMX	EIF2S1	0.86534
YTHDF1	EIF2S1	0.802083
ZC3H13	EIF2S1	0.827436

FMR1	FADD	0.817534
FTO	FADD	0.8569
LRPPRC	FADD	0.856253
RBM15B	FADD	0.807181
RBMX	FADD	0.800634
YTHDF1	FADD	0.851476
METTL3	FAM48A	0.806988
FMR1	GABARAP	0.810825
FTO	GABARAP	0.893755
HNRNPC	GABARAP	0.832537
LRPPRC	GABARAP	0.85291
METTL14	GABARAP	0.832057
METTL3	GABARAP	0.812406
RBM15B	GABARAP	0.840461
RBMX	GABARAP	0.837849
YTHDF1	GABARAP	0.877032
FTO	GABARAPL1	0.810764
YTHDF1	GABARAPL1	0.832738
HNRNPC	GAPDH	0.806771
RBM15B	GAPDH	0.810832
FMR1	GNAI3	0.81972
HNRNPC	GNAI3	0.819738
METTL14	GNAI3	0.822747
FTO	GNB2L1	0.889021
HNRNPA2B1	GNB2L1	0.862036
LRPPRC	GNB2L1	0.867103
METTL3	GNB2L1	0.896519
RBM15B	GNB2L1	0.82441
RBMX	GNB2L1	0.853023

YTHDF1	GNB2L1	0.94649
FTO	GRID2	-0.87181
HNRNPA2B1	GRID2	-0.80585
METTL3	GRID2	-0.84676
RBMX	GRID2	-0.81629
YTHDF1	GRID2	-0.84353
FMR1	HDAC1	0.85833
FTO	HDAC1	0.836007
HNRNPC	HDAC1	0.806469
LRPPRC	HDAC1	0.886709
METTL14	HDAC1	0.826974
METTL3	HDAC1	0.801747
RBM15B	HDAC1	0.815344
RBMX	HDAC1	0.805179
YTHDF1	HDAC1	0.853085
HNRNPC	HSPA8	0.822247
FTO	ITGB1	-0.83852
LRPPRC	ITGB1	-0.83934
METTL3	ITGB1	-0.81431
YTHDF1	ITGB1	-0.91247
YTHDF3	ITGB1	0.815233
FMR1	ITGB4	-0.8335
FTO	ITGB4	-0.88354
LRPPRC	ITGB4	-0.82428
RBM15	ITGB4	-0.8459
RBMX	ITGB4	-0.89083
YTHDF1	ITGB4	-0.82661
FMR1	KIAA0831	0.911266
FTO	KIAA0831	0.881506

HNRNPA2B1	KIAA0831	0.808851
HNRNPC	KIAA0831	0.842168
LRPPRC	KIAA0831	0.905306
METTL14	KIAA0831	0.887258
METTL3	KIAA0831	0.855779
RBM15	KIAA0831	0.823341
RBMX	KIAA0831	0.870558
YTHDF1	KIAA0831	0.87664
ZC3H13	KIAA0831	0.814321
ALKBH5	LAMP2	0.803231
FMR1	LAMP2	0.901236
FTO	LAMP2	0.887547
HNRNPC	LAMP2	0.826659
LRPPRC	LAMP2	0.858908
METTL14	LAMP2	0.865197
RBM15	LAMP2	0.80799
RBMX	LAMP2	0.859445
YTHDF1	LAMP2	0.83823
ZC3H13	LAMP2	0.809778
LRPPRC	MAP1LC3A	0.808462
RBM15B	MAP1LC3A	0.870036
YTHDF1	MAP1LC3A	0.819517
FMR1	MAPK9	0.838655
FTO	MAPK9	0.837163
HNRNPC	MAPK9	0.855971
LRPPRC	MAPK9	0.878563
METTL14	MAPK9	0.878912
RBMX	MAPK9	0.839999
RBM15B	MTMR14	0.803533

YTHDF1	MTMR14	0.813541
YTHDF3	MTMR14	-0.81138
YTHDF1	NFE2L2	-0.81736
YTHDF3	NFE2L2	0.829563
FTO	PARK2	-0.87021
HNRNPA2B1	PARK2	-0.82878
METTL3	PARK2	-0.85085
RBMX	PARK2	-0.8123
YTHDF1	PARK2	-0.88982
FTO	PARP1	0.833641
METTL3	PARP1	0.869495
YTHDF1	PARP1	0.841128
YTHDF3	PARP1	-0.83511
RBMX	PEX3	0.800343
FTO	PIK3C3	-0.8144
FMR1	PIK3R4	0.811211
FTO	PIK3R4	0.844638
HNRNPC	PIK3R4	0.865946
LRPPRC	PIK3R4	0.825829
METTL14	PIK3R4	0.829173
METTL3	PIK3R4	0.810514
RBMX	PIK3R4	0.826498
FTO	PTEN	0.82403
LRPPRC	PTEN	0.846407
METTL14	PTEN	0.852571
METTL3	PTEN	0.817103
RBM15B	PTEN	0.800337
RBMX	PTEN	0.839513
YTHDF1	PTEN	0.836962

YTHDF3	RAB24	-0.8033
YTHDF3	RAC1	0.802653
HNRNPA2B1	RAF1	0.804686
METTL3	RAF1	0.812871
YTHDF1	RB1	-0.82167
FMR1	RB1CC1	0.916846
FTO	RPS6KB1	0.820431
HNRNPA2B1	RPS6KB1	0.894743
METTL3	RPS6KB1	0.892454
RBM15	RPS6KB1	0.800864
YTHDF1	RPS6KB1	0.823755
ZC3H13	RPS6KB1	0.823178
YTHDF3	SPNS1	-0.81126
ALKBH5	ST13	0.818938
FMR1	ST13	0.867821
FTO	ST13	0.830763
HNRNPC	ST13	0.86736
LRPPRC	ST13	0.854627
METTL14	ST13	0.895606
RBM15	ST13	0.802329
RBMX	ST13	0.857749
FTO	TM9SF1	0.881656
HNRNPC	TM9SF1	0.824065
METTL3	TM9SF1	0.855081
RBM15B	TM9SF1	0.826137
YTHDF1	TM9SF1	0.859855
FTO	TSC1	0.859849
HNRNPA2B1	TSC1	0.874307
LRPPRC	TSC1	0.839708

METTL3	TSC1	0.855984
RBM15	TSC1	0.808659
RBMX	TSC1	0.808412
YTHDF1	TSC1	0.932181
ZC3H13	TSC1	0.801399
FTO	ULK2	0.900603
HNRNPA2B1	ULK2	0.822276
LRPPRC	ULK2	0.824093
METTL3	ULK2	0.906663
RBMX	ULK2	0.861275
YTHDF1	ULK2	0.897785
FTO	UVRAG	0.88092
HNRNPA2B1	UVRAG	0.859618
METTL3	UVRAG	0.899866
RBM15	UVRAG	0.822389
RBMX	UVRAG	0.846097
YTHDF1	UVRAG	0.903537
FMR1	VAMP7	0.82962
HNRNPC	VAMP7	0.864646
METTL14	VAMP7	0.826818
FMR1	WDR45L	0.826407
FTO	WIPI2	0.815847
YTHDF1	WIPI2	0.826966