Table SI. Function of circRNAs in gastric cancer.

First author, year	circRNA	Dysregulation	Function	Mechanism	(Refs.)
Zhang *et al*, 2019	circNRIP1	Up	miRNA sponge	circNRIP1 sponges miR-149-5p to affect the expression of AKT1	(1)
Zhu *et al*, 2019	circMLLT10	Up	miRNA sponge	circMLLT10 acts as a miR-509-3-5p sponge to attenuate its suppressive effect on target GINS4	(2)
Xie *et al,* 2020	circSHKBP1	Up	miRNA sponge	circSHKBP1 regulates the miR-582-3p/HUR/VEGF pathway, and suppresses HSP90 degradation	(3)
Rong *et al*, 2019	circPSMC3	Down	miRNA sponge	Acting as a competitive endogenous RNA through sponging miR-296-5p	(4)
Huang *et al*, 2019	circAKT3	Up	miRNA sponge	circAKT3 could promote PIK3R1 expression by sponging miR-198	(5)
Wang *et al,* 2019	circOSBPL10	Up	miRNA sponge	Via a circOSBPL10/miR-136-5p/WNT2 axis	(6)
Wang *et al*, 2019	circLMTK2	Up	miRNA sponge	circLMTK2 functions through the miR-150-5p/c-Myc axis	(7)
Zhu *et al*, 2019	circNHSL1	Up	miRNA sponge	circNHSL1 acts through themiR-1306-3p/SIX1/Vimentin axis	(8)
Liang *et al*, 2019	hsa_circ_006100	Up	miRNA sponge	hsa_circ_006100 functions via miR-195/GPRC5A signaling	(9)
Lin *et al*, 2020	circRNA_100876	Up	miRNA sponge	circRNA_100876 exerts its effects through miR-665/YAP1 signaling	(10)
Peng *et al*, 2020	circCUL2	Down	miRNA sponge	circCUL2 functions through miR-142-3p/ROCK2-mediated autophagy activation	(11)
Zhang *et al*, 2019	circDLST	Up	miRNA sponge	Sponging miR-502-5p to activate the NRAS/MEK1/ERK1/2 signaling	(12)
Liu *et al*, 2018	circYAP1	Down	miRNA sponge	circYAP1 functions by targeting the miR-367-5p/p27Kip1 axis	(13)
Wang *et al*, 2020	circR-RNF111	Up	miRNA sponge	Binding to miR-27b-3p	(14)
Cai *et al*, 2020	circ_0000267	Up	miRNA sponge	Modulating the miR-503-5p/HMGA2 axis	(15)
Liu *et al*, 2018	circ-SERPINE2	Up	miRNA sponge	Through the regulation of miR-375/YWHAZ	(16)
Deng *et al*, 2020	circRHOBTB3	Down	miRNA sponge	Acting as a sponge for miR-654-3p	(17)
Cai *et al*, 2020	circRNA_0005529	Up	miRNA sponge	Regulating miR-527/Sp1 axis	(15)
Li *et al*, 2020	circ_0008035	Up	miRNA sponge	Upregulating EIF4A1 through sponging miR-599	(18)
Luo *et al*, 2020	circCCDC9	Down	miRNA sponge	circCCDC9 functions through the miR-6792-3p/CAV1 axis	(19)
Zhang *et al*, 2021	circHN1	Up	miRNA sponge	Binding to miR-1248 and miR-375	(20)
Wu *et al*, 2020	circRNA_0005075	Down	miRNA sponge	Regulating miR-431/p53/epithelial-mesenchymal transition axis in gastric cancer	(21)
Du *et al*, 2019	circ_PRMT5	Up	miRNA sponge	Targeting the miR-145/miR-1304/MYC axis	(22)
Peng *et al*, 2020	circ-ITCH	Down	miRNA sponge	Through the Wnt/β-catenin signaling pathway by sequestering miR-17	(23)
Wang *et al*, 2020	circ_0000190	Down	miRNA sponge	Inhibiting the miR-1252/PAK3 pathway	(24)
Xia *et al*, 2020	circSMC3	Up	miRNA sponge	Through miR-4720-3p/TJP1 axis	(25)
Zhang *et al*, 2020	circDUSP16	Up	miRNA sponge	Sponging the miR-145-5p/ IVNS1ABP axis	(26)

Ma *et al*, 2020	hsa_circ_0004872	Down	miRNA sponge	Via the miR-224/Smad4/ADAR1 successive regulatory circuit	(27)
Xia *et al,* 2020	circPDZD8	Up	miRNA sponge	Regulating CHD9 via sponging miR-197-5p	(28)
Liu *et al*, 2020	circ_OXCT1	Down	miRNA sponge	Through the circ-OXCT1/miR-136/SMAD4 axis	(29)
Wang *et al*, 2020	circ_0027599	Down	miRNA sponge	PHLDA1 is regulated by circ_0027599/miR-101	(30)
Zhang *et al*, 2019	circCACTIN	Up	miRNA sponge	Sponging miR-331-3p and regulating TGFBR1 expression	(31)
Liang *et al*, 2020	circNRIP1	Up	miRNA sponge	By miR-182/ROCK1 axis	(32)
Zhou *et al*, 2020	circ_002117	Down	miRNA sponge	Upregulating HERPUD1 through miR-370 inhibition	(33)
Dai *et al*, 2019	circGRAMD1B	Down	miRNA sponge	Sponging miR-130a-3p and regulating PTEN and p21 expression	(34)
Lin *et al*, 2020	circRIMS	Up	miRNA sponge	As a sponge for hsa-miR-148a-5p and hsa-miR-218-5p	(35)
Cai *et al*, 2019	circHECTD1	Up	miRNA sponge	Targeting miR-1256 and activating β-catenin/c-Myc signaling	(36)
Wang *et al*, 2020	circ_0001023	Up	miRNA sponge	Regulating the miR-409-3p/PHF10 axis	(37)
Zhang *et al*, 2020	hsa_circ_0023642	Up	miRNA sponge	Sponging microRNA-223	(38)
Lai *et al*, 2019	circRNA0047905	Up	miRNA sponge	Acting as a sponge for miR-4516 and miR-1227-5	(39)
Wei *et al*, 2020	circRNA_104433	Up	miRNA sponge	Targeting miR-497-5p, which directly regulates CDC25A	(40)
Ma *et al*, 2020	circPIP5K1A	Up	miRNA sponge	Via miR-376c-3p/ZNF146 axis	(41)
Mo *et al*, 2020	hsa_circ_0000467	Up	miRNA sponge	Binding to miR-326-3p	(42)
Niu *et al*, 2020	hsa_circ_0001829	Up	miRNA sponge	Through miR-155-5p/SMAD2 axis	(43)
Wei *et al*, 2020	circHIPK3	Up	miRNA sponge	Sponging miR-107 and regulating BDNF expression	(44)
Wang *et al*, 2020	hsa_circ_0003159	Down	miRNA sponge	Regulating the miR-223-3p/NDRG1 axis	(45)
Chen *et al*, 2020	circ_0032821	Up	miRNA sponge	Regulating the miR-1236-3p/HMGB1 axis	(46)
Shen *et al*, 2020	hsa_circ_0005556	Up	miRNA sponge	Sponging miR-4270 to increase MMP19 expression	(47)
Cao *et al*, 2019	hsa_circ_0000291	Up	miRNA sponge	Targeting the miR-183/ITGB1 axis	(48)
Sun *et al*, 2020	circMAN2B2	Up	miRNA sponge	Regulating miR-145, as well as PI3K/AKT and JNK pathways	(49)
Li *et al*, 2020	circHIPK3	Up	miRNA sponge	Through regulation of the miR-876-5p/PIK3R1 axis	(50)
Liu *et al*, 2020	circ-NRIP1	Up	miRNA sponge	Modulating MYH9 via miR-186-5p	(51)
Hui *et al*, 2020	circNHSL1	Up	miRNA sponge	Through the miR-149-5p/YWHAZ axis	(52)
Liu *et al*, 2020	circ-MAT2B	Up	miRNA sponge	Regulating the miR-515-5p/HIF-1α axis	(53)
Sun *et al*, 2018	circ-SFMBT2	Up	miRNA sponge	Sponging miR-182-5p to enhance CReB1 expression	(54)
Zhang *et al*, 2019	hsa_circ_0067997	Up	miRNA sponge	Regulating the miR-515-5p/XIAP axis	(55)
Zhang *et al*, 2020	circATXN7	Up	miRNA sponge	Sponging miR-4319 and regulating ENTPD4	(56)
Xue *et al*, 2019	hsa_circ_0081143	Up	miRNA sponge	Targeting the miR-646/CDK6 pathway	(57)
Wang *et al*, 2019	circNF1	Up	miRNA sponge	Absorbing miR-16	(58)
Jin *et al*, 2020	circHIPK3	Up	miRNA sponge	Via the miR-653-5p/miR-338-3p-NRP1 axis	(59)
Chen *et al*, 2019	hsa_circ_0092306	Up	miRNA sponge	Regulating the pathway of miR-197-3p/PRKCB in MKN-45 cells	(60)

Qu *et al*, 2020	circFLNA	Up	miRNA sponge	Regulating the miR-646/PFKFB2 axis	(61)
Ma *et al*, 2021	circPTPN22	Up	miRNA sponge	Through the competitive binding of miRNA to inhibit the epithelial-mesenchymal transition pathway	(62)
Zhu *et al*, 2020	circKIAA0907	Down	miRNA sponge	Via the miR-452-5p/KAT6B axis	(63)
Lin *et al*, 2020	circCYFIP2	Up	miRNA sponge	Via the miR-1205/E2F1 axis	(64)
Li *et al*, 2021	hsa_circ_0023409	Up	miRNA sponge	Activating the IRS4/PI3K/AKT pathway by acting as a sponge for miR-542-3p	(65)
Mi *et al*, 2020	circ 0000144	Up	miRNA sponge	Modulating GPRC5A expression by acting as an miR-623 sponge	(66)
Jin *et al*, 2020	circ_C16orf62	Down	miRNA sponge	By the miR-421/TUBB2A axis	(67)
Guo *et a*l, 2021	circREPS2	Down	miRNA sponge	Via miR-558/RUNX3/β-catenin signaling	(68)
Pu *et al*, 2020	circCUL3	Up	miRNA sponge	Accelerating the Warburg effect progression through regulating the STAT3/HK2 axis	(69)
Yue *et al*, 2021	circ_0004104	Up	miRNA sponge	Regulating the miR-539-3p/RNF2 axis	(70)
Yu *et al*, 2021	circNEK9	Up	miRNA sponge	Targeting the miR-409-3p/MAP7 axis	(71)
Yang *et al*, 2021	circ_0044516	Up	miRNA sponge	Modulating the miR-149-5p/HuR axis	(72)
Wang *et al*, 2021	circ_PGPEP1	Up	miRNA sponge	Sponging miR-1297 and regulating E2F3	(73)
Xu *et al*, 2020	hsa-circ-0007766	Up	miRNA sponge	Regulating GDF15 via the hsa-circ-0007766/miR-1233-3p/GDF15 axis	(74)
Cao *et al*, 2021	circLMO7	Up	miRNA sponge	Acting as an miR-30a-3p sponge and affecting the WNT2/β-catenin pathway	(75)
Wang *et al*, 2021	circ_SMAD4	Up	miRNA sponge and interaction with protein	Activating CTNNB1-dependent WNT/β-catenin signaling by interacting with miR-1276 and TCF4	(76)
Wang *et al*, 2021	circ_ITCH	Down	miRNA sponge	Regulating the miR-199a-5p/Klotho axis	(77)
Xu *et al*, 2021	circ_0081146	Up	miRNA sponge	Sponging miR-144 and upregulating HMGB1	(78)
Hua *et al*, 2021	circ_0006282	Up	miRNA sponge	Regulating miR-144-5p/tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein β axis	(79)
Wang *et al*, 2021	hsa_circ_0009172	Down	miRNA sponge	Regulation of miR-485-3p-mediated NTRK3	(80)
Deng *et al*, 2021	circVAPA	Up	miRNA sponge	Regulating the miR-125b-5p/STAT3 axis	(81)
Li *et al*, 2021	circ_002059	Down	miRNA sponge	Via the miR-182/MTSS1 axis	(82)
Xia *et al*, 2021	circFAM73A	Up	miRNA sponge and interaction with protein	Through the miR-490-3p/HMGA2 positive feedback loop and HNRNPK-mediated β-catenin stabilization	(83)
Bu *et al*, 2021	circAFF2	Up	miRNA sponge	Via miR-6894-5p/ANTXR 1 signaling	(84)
Chen *et al*, 2021	circACC1	Up	miRNA sponge	Via the circACC1/miR-29c-3p/FOXP1 network	(85)

Li *et al*, 2021	circ-sirt1	Down	miRNA sponge	Sponging miR-132-3p/miR-212-3p and upregulating sirt1 expression	(86)
Han *et al*, 2021	circ_0027599	Down	miRNA sponge	Via modulation of the miR-21-5p/RUNX1 axis	(87)
Ye *et al*, 2021	hsa_circ_0001874	Down	miRNA sponge	Sponging miR-593-5p, miR-103a-3p and miR-107	(88)
Lu *et al*, 2021	circVPS33B	Up	miRNA sponge	Regulating the miR-873-5p/HNRNPK axis	(89)
Fan *et al*, 2021	circ_CORO1C	Up	miRNA sponge	Modulating miR-138-5p/KLF12 axis	(90)
Lu *et al*, 2021	circHECTD1	Up	miRNA sponge	Via the miR-137/PBX3 axis	(91)
Zhao *et al*, 2021	circATP2B1	Up	miRNA sponge	Decreasing the suppression of PKM2 by miR-326-3p/miR-330-5p	(92)
Wang *et al*, 2021	circBFAR	Up	miRNA sponge	Sponging miR-513a-3p/hexokinase 2 axis	(93)
Li *et al*, 2021	circ_0044366	Up	miRNA sponge	Targeting the miR-29a/VEGF axis	(94)
Gao *et al*, 2021	hsa_circ_0000117	Up	miRNA sponge	Sponging miR-337-3p and increasing STAT3 expression	(95)
Wang *et al*, 2021	hsa_circRNA_100269	Down	miRNA sponge	Inactivating the PI3K/Akt axis	(96)
Xu *et al,* 2021	circTMC5	Up	miRNA sponge	Targeting miR-361-3p/RABL6	(97)
Hare *et al*, 2021	hsa-circ_0000064	Up	miRNA sponge	Modulating the miR-621/SYF2 axis	(98)
Qiang *et al,* 2021	circCSNK1G1	Up	miRNA sponge	Via the miR-758/ZNF217 axis	(99)
Wu *et al*, 2021	circALPL	Up	miRNA sponge	Sponging miR-127, thus upregulating MTDH	(100)
Jiang *et al*, 2021	CDR1as	Down	miRNA sponge	Sponging miR-876-5p to upregulate GNG7 expression	(101)
Wang *et al,* 2021	circRNA_100290	Up	miRNA sponge	Via the miR-29b-3p/ITGA11 axis	(102)
Liang *et al,* 2021	hsa_circ_0110389	Up	miRNA sponge	Upregulating SORT1 via sponging miR-127-5p and miR-136-5p	(103)
Yang *et al*, 2021	circHIPK3	Up	miRNA sponge	Through the miR-637/AKT1 pathway	(104)
Qiu *et al*, 2022	circTHBS1	Up	miRNA sponge	Sponging miR-204-5p to promote the expression of INHBA	(105)
Yang *et al*, 2019	circ-HuR	Down	Interaction with protein	Inhibiting CNBP transactivation	(106)
Zang *et al*, 2022	circEIF4G3	Down	Interaction with protein	Through the regulation of δ-catenin protein stability and the miR-4449/SIK1 axis	(107)
Ma *et al,* 2022	circARID1A	Up	Interaction with protein	Forming a circARID1A-IGF2BP3-SLC7A5 RNA-protein ternary complex	(108)
Ding *et al*, 2019	circ-DONSON	Up	Regulating transcription	Recruiting the NURF complex to initiate SOX4 expression	(109)
Jie *et al*, 2020	circMRPS35	Down	Chromatin remodeling	Recruiting KAT7 to govern histone modification	(110)
Jiang *et al*, 2021	circMAPK1	Down	Encoding protein	Suppressing activation of MAPK signaling	(111)

miR/miRNA, microRNA; circRNA, circular RNA.

References

1. Zhang X, Wang S, Wang H*, et al*: Circular RNA circNRIP1 acts as a microRNA-149-5p sponge to promote gastric cancer progression via the AKT1/mTOR pathway. Mol Cancer 18: 20, 2019.
2. Zhu Z, Yu Z, Rong Z*, et al*: The novel GINS4 axis promotes gastric cancer growth and progression by activating Rac1 and CDC42. Theranostics 9: 8294-8311, 2019.
3. Xie M, Yu T, Jing X*, et al*: Exosomal circSHKBP1 promotes gastric cancer progression via regulating the miR-582-3p/HUR/VEGF axis and suppressing HSP90 degradation. Mol Cancer 19: 112, 2020.
4. Rong D, Lu C, Zhang B*, et al*: CircPSMC3 suppresses the proliferation and metastasis of gastric cancer by acting as a competitive endogenous RNA through sponging miR-296-5p. Mol Cancer 18: 25, 2019.
5. Huang X, Li Z, Zhang Q*, et al*: Circular RNA AKT3 upregulates PIK3R1 to enhance cisplatin resistance in gastric cancer via miR-198 suppression. Mol Cancer 18: 71, 2019.
6. Wang S, Zhang X, Li Z*, et al*: Circular RNA profile identifies circOSBPL10 as an oncogenic factor and prognostic marker in gastric cancer. Oncogene 38: 6985-7001, 2019.
7. Wang S, Tang D, Wang W*, et al*: circLMTK2 acts as a sponge of miR-150-5p and promotes proliferation and metastasis in gastric cancer. Mol Cancer 18: 162, 2019.
8. Zhu Z, Rong Z, Luo Z*, et al*: Circular RNA circNHSL1 promotes gastric cancer progression through the miR-1306-3p/SIX1/vimentin axis. Mol Cancer 18: 126, 2019.
9. Liang M, Huang G, Liu Z*, et al*: Elevated levels of hsa_circ_006100 in gastric cancer promote cell growth and metastasis via miR-195/GPRC5A signalling. Cell Prolif 52: e12661, 2019.
10. Lin X, Huang C, Chen Z, Wang H and Zeng Y: CircRNA_100876 Is Upregulated in Gastric Cancer (GC) and Promotes the GC Cells' Growth, Migration and Invasion via miR-665/YAP1 Signaling. Front Genet 11: 546275, 2020.
11. Peng L, Sang H, Wei S*, et al*: circCUL2 regulates gastric cancer malignant transformation and cisplatin resistance by modulating autophagy activation via miR-142-3p/ROCK2. Mol Cancer 19: 156, 2020.
12. Zhang J, Hou L, Liang R*, et al*: CircDLST promotes the tumorigenesis and metastasis of gastric cancer by sponging miR-502-5p and activating the NRAS/MEK1/ERK1/2 signaling. Mol Cancer 18: 80, 2019.
13. Liu H, Liu Y, Bian Z*, et al*: Circular RNA YAP1 inhibits the proliferation and invasion of gastric cancer cells by regulating the miR-367-5p/p27 (Kip1) axis. Mol Cancer 17: 151, 2018.
14. Wang Z, Jiang Z, Zhou J and Liu Z: circRNA RNF111 regulates the growth, migration and invasion of gastric cancer cells by binding to miR-27b-3p. Int J Mol Med 46: 1873-1885, 2020.
15. Cai X, Nie J, Chen L and Yu F: Circ_0000267 promotes gastric cancer progression via sponging MiR-503-5p and regulating HMGA2 expression. Mol Genet Genomic Med 8: e1093, 2020.
16. Liu J, Song S, Lin S*, et al*: Circ-SERPINE2 promotes the development of gastric carcinoma by sponging miR-375 and modulating YWHAZ. Cell Prolif 52: e12648, 2019.

17. Deng G, Mou T, He J, *et al*: Circular RNA circRHOBTB3 acts as a sponge for miR-654-3p inhibiting gastric cancer growth. J Exp Clin Cancer Res 39: 1, 2020.
18. Li C, Tian Y, Liang Y and Li Q: Circ_0008035 contributes to cell proliferation and inhibits apoptosis and ferroptosis in gastric cancer via miR-599/EIF4A1 axis. Cancer Cell Int 20: 84, 2020.
19. Luo Z, Rong Z, Zhang J, *et al*: Circular RNA circCCDC9 acts as a miR-6792-3p sponge to suppress the progression of gastric cancer through regulating CAV1 expression. Mol Cancer 19: 86, 2020.
20. Zhang Y, Wang M, Zang X, *et al*: CircHN1 affects cell proliferation and migration in gastric cancer. J Clin Lab Anal 34: e23433, 2020.
21. Wu J, Chen Z, Song Y, *et al*: CircRNA_0005075 suppresses carcinogenesis via regulating miR-431/p53/epithelial-mesenchymal transition axis in gastric cancer. Cell Biochem Funct 38: 932-942, 2020.
22. Du W, Li D, Guo X, *et al*: Circ-PRMT5 promotes gastric cancer progression by sponging miR-145 and miR-1304 to upregulate MYC. Artif Cells Nanomed Biotechnol 47: 4120-4130, 2019.
23. Peng Y and Wang HH: Cir-ITCH inhibits gastric cancer migration, invasion and proliferation by regulating the Wnt/β-catenin pathway. Sci Rep 10: 17443, 2020.
24. Wang GJ, Yu TY, Li YR, Liu YJ and Deng BB: Circ_0000190 suppresses gastric cancer progression potentially via inhibiting miR-1252/PAK3 pathway. Cancer Cell Int 20: 351, 2020.
25. Xia T, Pan Z and Zhang J: CircSMC3 regulates gastric cancer tumorigenesis by targeting miR-4720-3p/TJP1 axis. Cancer Med 9: 4299-4309, 2020.
26. Zhang Z, Wang C, Zhang Y, Yu S, Zhao G and Xu J: CircDUSP16 promotes the tumorigenesis and invasion of gastric cancer by sponging miR-145-5p. Gastric Cancer 23: 437-448, 2020.
27. Ma C, Wang X, Yang F, *et al*: Circular RNA hsa_circ_0004872 inhibits gastric cancer progression via the miR-224/Smad4/ADAR1 successive regulatory circuit. Mol Cancer 19: 157, 2020.
28. Xia T, Pan Z and Zhang J: CircPDZD8 promotes gastric cancer progression by regulating CHD9 via sponging miR-197-5p. Aging (Albany NY) 12: 19352-19364, 2020.
29. Liu J, Dai X, Guo X, Cheng A, Mac SM and Wang Z: Circ-OXCT1 Suppresses Gastric Cancer EMT and Metastasis by Attenuating TGF-β Pathway Through the Circ-OXCT1/miR-136/SMAD4 Axis. Onco Targets Ther 13: 3987-3998, 2020.
30. Wang L, Shen J and Jiang Y: Circ_0027599/PHDLA1 suppresses gastric cancer progression by sponging miR-101-3p.1. Cell Biosci 8: 58, 2018.
31. Zhang L, Song X, Chen X, *et al*: Circular RNA CircCACTIN Promotes Gastric Cancer Progression by Sponging MiR-331-3p and Regulating TGFBR1 Expression. Int J Biol Sci 15: 1091-1103, 2019.
32. Liang L and Li L: Down-Regulation of circNRIP1 Promotes the Apoptosis and Inhibits the Migration and Invasion of Gastric Cancer Cells by miR-182/ROCK1 Axis. Onco Targets Ther 13: 6279-6288, 2020.
33. Zhou N, Qiao H, Zeng M, Yang L, Zhou Y and Guan Q: Circ_002117 binds to microRNA-370 and promotes endoplasmic reticulum stress-induced apoptosis in gastric cancer. Cancer Cell Int 20: 465, 2020.
34. Dai X, Guo X, Liu J, *et al*: Circular RNA circGRAMD1B inhibits gastric cancer progression by sponging miR-130a-3p and regulating PTEN and p21 expression. Aging (Albany NY) 11: 9689-9708, 2019.

35. Lin J, Zhang Y, Zeng X, Xue C and Lin X: CircRNA CircRIMS Acts as a MicroRNA Sponge to Promote Gastric Cancer Metastasis. ACS Omega 5: 23237-23246, 2020.
36. Cai J, Chen Z, Wang J, *et al*: circHECTD1 facilitates glutaminolysis to promote gastric cancer progression by targeting miR-1256 and activating β-catenin/c-Myc signaling. Cell Death Dis 10: 576, 2019.
37. Wang Y, Zhang J, Chen X and Gao L: Circ_0001023 Promotes Proliferation and Metastasis of Gastric Cancer Cells Through miR-409-3p/PHF10 Axis. Onco Targets Ther 13: 4533-4544, 2020.
38. Zhang Y, Xia L, Wu J, Xu X and Li G: Hsa_circ_0023642 promotes proliferation, invasion, and migration of gastric cancer by sponging microRNA-223. J Clin Lab Anal 34: e23428, 2020.
39. Lai Z, Yang Y, Wang C, *et al*: Circular RNA 0047905 acts as a sponge for microRNA4516 and microRNA1227-5p, initiating gastric cancer progression. Cell Cycle 18: 1560-1572, 2019.
40. Wei W, Mo X, Yan L, *et al*: Circular RNA Profiling Reveals That circRNA_104433 Regulates Cell Growth by Targeting miR-497-5p in Gastric Cancer. Cancer Manag Res 12: 15-30, 2020.
41. Ma Y, Cong X, Zhang Y, Yin X, Zhu Z and Xue Y: CircPIP5K1A facilitates gastric cancer progression via miR-376c-3p/ZNF146 axis. Cancer Cell Int 20: 81, 2020.
42. Mo WL, Jiang JT, Zhang L, *et al*: Circular RNA hsa_circ_0000467 Promotes the Development of Gastric Cancer by Competitively Binding to MicroRNA miR-326-3p. Biomed Res Int 2020: 4030826, 2020.
43. Niu Q, Dong Z, Liang M, *et al*: Circular RNA hsa_circ_0001829 promotes gastric cancer progression through miR-155-5p/SMAD2 axis. J Exp Clin Cancer Res 39: 280, 2020.
44. Wei J, Xu H, Wei W, *et al*: circHIPK3 Promotes Cell Proliferation and Migration of Gastric Cancer by Sponging miR-107 and Regulating BDNF Expression. Onco Targets Ther 13: 1613-1624, 2020.
45. Wang J, Lv W, Lin Z, Wang X, Bu J and Su Y: Hsa_circ_0003159 inhibits gastric cancer progression by regulating miR-223-3p/NDRG1 axis. Cancer Cell Int 20: 57, 2020.
46. Chen L, Chi K, Xiang H and Yang Y: Circ_0032821 Facilitates Gastric Cancer Cell Proliferation, Migration, Invasion and Glycolysis by Regulating MiR-1236-3p/HMGB1 Axis. Cancer Manag Res 12: 9965-9976, 2020.
47. Shen D, Zhao H, Zeng P, *et al*: Circular RNA hsa_circ_0005556 Accelerates Gastric Cancer Progression by Sponging miR-4270 to Increase MMP19 Expression. J Gastric Cancer 20: 300-312, 2020.
48. Cao C, Han S, Yuan Y, *et al*: Downregulated Circular RNA hsa_circ_0000291 Suppresses Migration And Proliferation Of Gastric Cancer Via Targeting The miR-183/ITGB1 Axis. Cancer Manag Res 11: 9675-9683, 2019.
49. Sun B, Sun H, Wang Q, *et al*: Circular RNA circMAN2B2 promotes growth and migration of gastric cancer cells by down-regulation of miR-145. J Clin Lab Anal 34: e23215, 2020.
50. Li Q, Tian Y, Liang Y and Li C: CircHIPK3/miR-876-5p/PIK3R1 axis regulates regulation proliferation, migration, invasion, and glutaminolysis in gastric cancer cells. Cancer Cell Int 20: 391, 2020.
51. Liu Y, Jiang Y, Xu L, *et al*: circ-NRIP1 Promotes Glycolysis and Tumor Progression by Regulating miR-186-5p/MYH9 Axis in Gastric Cancer. Cancer Manag Res 12: 5945-5956, 2020.

52. Hui C, Tian L and He X: Circular RNA circNHSL1 Contributes to Gastric Cancer Progression Through the miR-149-5p/YWHAZ Axis. Cancer Manag Res 12: 7117-7130, 2020.
53. Liu J, Liu H, Zeng Q, Xu P, Liu M and Yang N: Circular RNA circ-MAT2B facilitates glycolysis and growth of gastric cancer through regulating the miR-515-5p/HIF-1α axis. Cancer Cell Int 20: 171, 2020.
54. Sun H, Xi P, Sun Z*, et al*: Circ-SFMBT2 promotes the proliferation of gastric cancer cells through sponging miR-182-5p to enhance CREB1 expression. Cancer Manag Res 10: 5725-5734, 2018.
55. Zhang H, Wang X, Huang H, Wang Y, Zhang F and Wang S: Hsa_circ_0067997 promotes the progression of gastric cancer by inhibition of miR-515-5p and activation of X chromosome-linked inhibitor of apoptosis (XIAP). Artif Cells Nanomed Biotechnol 47: 308-318, 2019.
56. Zhang Z, Wu H, Chen Z, Li G and Liu B: Circular RNA ATXN7 promotes the development of gastric cancer through sponging miR-4319 and regulating ENTPD4. Cancer Cell Int 20: 25, 2020.
57. Xue M, Li G, Fang X, Wang L, Jin Y and Zhou Q: hsa_circ_0081143 promotes cisplatin resistance in gastric cancer by targeting miR-646/CDK6 pathway. Cancer Cell Int 19: 25, 2019.
58. Wang Z, Ma K, Pitts S*, et al*: Novel circular RNA circNF1 acts as a molecular sponge, promoting gastric cancer by absorbing miR-16. Endocr Relat Cancer 26: 265-277, 2019.
59. Jin Y, Che X, Qu X*, et al*: CircHIPK3 Promotes Metastasis of Gastric Cancer via miR-653-5p/miR-338-3p-NRP1 Axis Under a Long-Term Hypoxic Microenvironment. Front Oncol 10: 1612, 2020.
60. Chen Z, Ju H, Zhao T*, et al*: hsa_circ_0092306 Targeting miR-197-3p Promotes Gastric Cancer Development by Regulating PRKCB in MKN-45 Cells. Mol Ther Nucleic Acids 18: 617-626, 2019.
61. Qu J, Yang J, Chen M, Wei R and Tian J: CircFLNA Acts as a Sponge of miR-646 to Facilitate the Proliferation, Metastasis, Glycolysis, and Apoptosis Inhibition of Gastric Cancer by Targeting PFKFB2. Cancer Manag Res 12: 8093-8103, 2020.
62. Ma S, Kong S, Gu X*, et al*: As a biomarker for gastric cancer, circPTPN22 regulates the progression of gastric cancer through the EMT pathway. Cancer Cell Int 21: 44, 2021.
63. Zhu L, Wang C, Lin S and Zong L: CircKIAA0907 Retards Cell Growth, Cell Cycle, and Autophagy of Gastric Cancer In Vitro and Inhibits Tumorigenesis In Vivo via the miR-452-5p/KAT6B Axis. Med Sci Monit 26: e924160, 2020.
64. Lin J, Liao S, Li E*, et al*: circCYFIP2 Acts as a Sponge of miR-1205 and Affects the Expression of Its Target Gene E2F1 to Regulate Gastric Cancer Metastasis. Mol Ther Nucleic Acids 21: 121-132, 2020.
65. Li J, Yang Y, Xu D and Cao L: hsa_circ_0023409 Accelerates Gastric Cancer Cell Growth and Metastasis Through Regulating the IRS4/PI3K/AKT Pathway. Cell Transplant 30: 963689720975390, 2021.
66. Mi L, Lei L, Yin X*, et al*: Circ_0000144 functions as a miR-623 sponge to enhance gastric cancer progression via up-regulating GPRC5A. Biosci Rep 40: 2020.
67. Jin Y, Zhang S and Liu L: Circular RNA circ_C16orf62 Suppresses Cell Growth in Gastric Cancer by miR-421/Tubulin beta-2A Chain (TUBB2A) Axis. Med Sci Monit 26: e924343, 2020.
68. Guo X, Dai X, Liu J, Cheng A, Qin C and Wang Z: Circular RNA circREPS2 Acts as a Sponge of miR-558 to Suppress Gastric Cancer Progression by Regulating RUNX3/β-catenin Signaling. Mol Ther Nucleic Acids 21: 577-591, 2020.

69. Pu Z, Xu M, Yuan X, Xie H and Zhao J: Circular RNA circCUL3 Accelerates the Warburg Effect Progression of Gastric Cancer through Regulating the STAT3/HK2 Axis. Mol Ther Nucleic Acids 22: 310-318, 2020.
70. Yue F, Peng K, Zhang L and Zhang J: Circ_0004104 Accelerates the Progression of Gastric Cancer by Regulating the miR-539-3p/RNF2 Axis. Dig Dis Sci 2021.
71. Yu L, Xie J, Liu X, Yu Y and Wang S: Plasma Exosomal CircNEK9 Accelerates the Progression of Gastric Cancer via miR-409-3p/MAP7 Axis. Dig Dis Sci 2021.
72. Yang Y, Cai B, Shi X, Duan C, Tong T and Yu C: circ_0044516 functions in the progression of gastric cancer by modulating MicroRNA-149-5p/HuR axis. Mol Cell Biochem 2021.
73. Wang Y, Liu X, Wang L, Zhang Z, Li Z and Li M: Circ_PGPEP1 Serves as a Sponge of miR-1297 to Promote Gastric Cancer Progression via Regulating E2F3. Dig Dis Sci 2021.
74. Xu W, Zhou B, Wu J, Jiang P, Chen H and Yan F: Circular RNA hsa-circ-0007766 modulates the progression of Gastric Carcinoma via miR-1233-3p/GDF15 axis. Int J Med Sci 17: 1569-1583, 2020.
75. Cao J, Zhang X, Xu P, *et al*: Circular RNA circLMO7 acts as a microRNA-30a-3p sponge to promote gastric cancer progression via the WNT2/β-catenin pathway. J Exp Clin Cancer Res 40: 6, 2021.
76. Wang L, Li B, Yi X, Xiao X, Zheng Q and Ma L: Circ_SMAD4 promotes gastric carcinogenesis by activating wnt/β-catenin pathway. Cell Prolif e12981, 2021.
77. Wang Y, Wang H, Zheng R, *et al*: Circular RNA ITCH suppresses metastasis of gastric cancer via regulating miR-199a-5p/Klotho axis. Cell Cycle 1-15, 2021.
78. Xu Q, Liao B, Hu S, Zhou Y and Xia W: Circular RNA 0081146 facilitates the progression of gastric cancer by sponging miR-144 and up-regulating HMGB1. Biotechnol Lett 2021.
79. Hua Y, Wang H, Wang H, *et al*: Circular RNA Circ_0006282 Promotes Cell Proliferation and Metastasis in Gastric Cancer by Regulating MicroRNA-144-5p/Tyrosine 3-Monooxygenase/Tryptophan 5-Monooxygenase Activation Protein beta Axis. Cancer Manag Res 13: 815-827, 2021.
80. Wang H, Wang N, Zheng X, *et al*: Circular RNA hsa_circ_0009172 suppresses gastric cancer by regulation of microRNA-485-3p-mediated NTRK3. Cancer Gene Ther 2021.
81. Deng P, Sun M, Zhao WY, *et al*: Circular RNA circVAPA promotes chemotherapy drug resistance in gastric cancer progression by regulating miR-125b-5p/STAT3 axis. World J Gastroenterol 27: 487-500, 2021.
82. Li T, Zuo X and Meng X: Circ_002059 suppresses cell proliferation and migration of gastric cancer via miR-182/MTSS1 axis. Acta Biochim Biophys Sin (Shanghai) 2021.
83. Xia Y, Lv J, Jiang T, *et al*: CircFAM73A promotes the cancer stem cell-like properties of gastric cancer through the miR-490-3p/HMGA2 positive feedback loop and HNRNPK-mediated beta-catenin stabilization. J Exp Clin Cancer Res 40: 103, 2021.
84. Bu X, Chen Z, Zhang A, *et al*: Circular RNA CircAFF2 Accelerates Gastric Cancer Development by Activating MiR-6894-5p and Regulating ANTXR 1 Expression. Clin Res Hepatol Gastroenterol 101671, 2021.
85. Chen X, Liu C, Ji L, *et al*: The circACC1/miR-29c-3p/FOXP1 network plays a key role in gastric cancer by regulating cell proliferation. Biochem Biophys Res Commun 557: 221-227, 2021.

86. Li QK, Liu YK, Li JW, Liu YT, Li YF and Li BH: Circ-sirt1 inhibits growth and invasion of gastric cancer by sponging miR-132-3p/miR-212-3p and upregulating sirt1 expression. Neoplasma 2021.
87. Han J, Yang Z, Zhao S, Zheng L, Tian Y and Lv Y: Circ_0027599 elevates RUNX1 expression via sponging miR-21-5p on gastric cancer progression. Eur J Clin Invest e13592, 2021.
88. Ye Q, Qi C, Xi M and Ye G: Circular RNA hsa_circ_0001874 is an indicator for gastric cancer. J Clin Lab Anal e23851, 2021.
89. Lu Y, Cheng J, Cai W, Zhuo H, Wu G and Cai J: Inhibition of circRNA circVPS33B Reduces Warburg Effect and Tumor Growth Through Regulating the miR-873-5p/HNRNPK Axis in Infiltrative Gastric Cancer. Onco Targets Ther 14: 3095-3108, 2021.
90. Fan Y, Liu M, Liu A*, et al*: Depletion of Circular RNA circ_CORO1C Suppresses Gastric Cancer Development by Modulating miR-138-5p/KLF12 Axis. Cancer Manag Res 13: 3789-3801, 2021.
91. Lu Y, Li L, Li L, Wu G and Liu G: Circular RNA circHECTD1 prevents Diosbulbin-B-sensitivity via miR-137/PBX3 axis in gastric cancer. Cancer Cell Int 21: 264, 2021.
92. Zhao X, Tian Z and Liu L: circATP2B1 Promotes Aerobic Glycolysis in Gastric Cancer Cells Through Regulation of the miR-326 Gene Cluster. Front Oncol 11: 628624, 2021.
93. Wang Y, Cao B, Zhao R, Li H, Wei B and Dai G: Knockdown of circBFAR inhibits proliferation and glycolysis in gastric cancer by sponging miR-513a-3p/hexokinase 2 axis. Biochem Biophys Res Commun 560: 80-86, 2021.
94. Li S, Li J, Zhang H*, et al*: Gastric cancer derived exosomes mediate the delivery of circRNA to promote angiogenesis by targeting miR-29a/VEGF axis in endothelial cells. Biochem Biophys Res Commun 560: 37-44, 2021.
95. Gao Q, Liu Q and Chen H: Circular RNA hsa_circ_0000117 accelerates the proliferation and invasion of gastric cancer cells by regulating the microRNA-337-3p/signal transducer and activator of transcription 3 axis. Bioengineered 12: 1381-1390, 2021.
96. Wang Z and Liu C: Upregulated hsa_circRNA_100269 inhibits the growth and metastasis of gastric cancer through inactivating PI3K/Akt axis. PLoS One 16: e0250603, 2021.
97. Xu P, Xu X, Wu X*, et al*: CircTMC5 promotes gastric cancer progression and metastasis by targeting miR-361-3p/RABL6. Gastric Cancer 2021.
98. Hare A, Zeng M, Rehemutula A, Su SK and Wang HF: Hsa-circ_0000064 accelerates the malignant progression of gastric cancer via sponging microRNA-621. Kaohsiung J Med Sci 2021.
99. Qiang F and Li J: CircCSNK1G1 Contributes to the Tumorigenesis of Gastric Cancer by Sponging miR-758 and Regulating ZNF217 Expression. Cancer Manag Res 13: 5027-5038, 2021.
100. Wu P, Ye D, Li J*, et al*: circALPL Sponges miR-127 to Promote Gastric Cancer Progression by Enhancing MTDH Expression. J Cancer 12: 4924-4932, 2021.
101. Jiang J, Li R, Wang J, Hou J, Qian H and Xu W: Circular RNA CDR1as Inhibits the Metastasis of Gastric Cancer through Targeting miR-876-5p/GNG7 Axis. Gastroenterol Res Pract 2021: 5583029, 2021.
102. Wang G, Sun D, Li W and Xin Y: CircRNA_100290 promotes GC cell proliferation and invasion via the miR-29b-3p/ITGA11 axis and is regulated by EIF4A3. Cancer Cell Int 21: 324, 2021.
103. Liang M, Yao W, Shi B*, et al*: Circular RNA hsa_circ_0110389 promotes gastric cancer progression through upregulating SORT1 via sponging miR-127-5p and miR-136-5p. Cell Death Dis 12: 639, 2021.

104. Yang D, Hu Z, Zhang Y, *et al*: CircHIPK3 Promotes the Tumorigenesis and Development of Gastric Cancer Through miR-637/AKT1 Pathway. Front Oncol 11: 637761, 2021.
105. Qiu S, Li B, Xia Y, *et al*: CircTHBS1 drives gastric cancer progression by increasing INHBA mRNA expression and stability in a ceRNA- and RBP-dependent manner. Cell Death Dis 13: 266, 2022.
106. Yang F, Hu A, Li D, *et al*: Circ-HuR suppresses HuR expression and gastric cancer progression by inhibiting CNBP transactivation. Mol Cancer 18: 158, 2019.
107. Zang X, Jiang J, Gu J, *et al*: Circular RNA EIF4G3 suppresses gastric cancer progression through inhibition of beta-catenin by promoting delta-catenin ubiquitin degradation and upregulating SIK1. Mol Cancer 21: 141, 2022.
108. Ma Q, Yang F, Huang B, *et al*: CircARID1A binds to IGF2BP3 in gastric cancer and promotes cancer proliferation by forming a circARID1A-IGF2BP3-SLC7A5 RNA-protein ternary complex. J Exp Clin Cancer Res 41: 251, 2022.
109. Ding L, Zhao Y, Dang S, *et al*: Circular RNA circ-DONSON facilitates gastric cancer growth and invasion via NURF complex dependent activation of transcription factor SOX4. Mol Cancer 18: 45, 2019.
110. Jie M, Wu Y, Gao M, *et al*: CircMRPS35 suppresses gastric cancer progression via recruiting KAT7 to govern histone modification. Mol Cancer 19: 56, 2020.
111. Jiang T, Xia Y, Lv J, *et al*: A novel protein encoded by circMAPK1 inhibits progression of gastric cancer by suppressing activation of MAPK signaling. Mol Cancer 20: 66, 2021.

Table SII. circRNAs as biomarkers in gastric cancer.

First author, year	circRNA	Sample	Dysregulation	Function	Sensitivity, %	Specificity, %	AUC	Cutoff value	Clinical association	(Refs.)
Tang *et al*, 2018	circ-KIAA1244	Tissues	Down	Independent prognostic indicator	77.42	0.68	0.7481	1.443	TNM stage, lymphatic metastasis and overall survival time	(1)
Zhao *et al*, 2018	hsa_circ_0000181	Plasma	Down	Diagnosis biomarker	0.21	0.99	0.5820	7.270	Differentiation and CEA	(2)
		Tissues			0.85	0.54	0.7560	9.400	Tumor diameter, lymphatic metastasis, distal metastasis and CA19-9	
Rong *et al*, 2018	circ_0066444	Tissues	Up	Diagnosis biomarker	0.71	0.69	0.7328	-	Lymphatic metastasis	(3)
Cai *et al*, 2019	circSMARCA5	Tissues	Down	Diagnosis and prognosis biomarker	-	-	0.8060	-	Tumor differentiation, LNM, vascular invasion, and AJCC stage	(4)
Lu *et al*, 2019	hsa_circ_0000467	Tissues	Up	Diagnosis and prognostic biomarker	0.71	0.65	0.7900	-	Lymphatic invasion and TNM stage	(5)
Lu *et al*, 2019	hsa_circ_0006848	Plasma	Down	Diagnosis biomarker	-	-	0.7330	-	Histological grade and tumor size	(6)
Lu *et al*, 2019	hsa_circ_0067582	Tissues	Down	Diagnosis biomarker	0.55	0.75	0.6710	10.610	Tissue CEA level and stages	(7)
	hsa_circ_0005758	Tissues	Down	Diagnosis biomarker	0.75	0.68	0.7210	10.200	Tissue CEA level and perineural invasion	
Yang *et al*, 2019	hsa_circ_0005556	Tissues	Down	Diagnosis and prognosis biomarker	0.64	0.82	0.7730	-	Differentiation, TNM stage, and lymphatic metastasis	(8)
Wei *et al*, 2020	hsa_circRNA_102958	Tissues	Up	Diagnosis biomarker	0.61	86.00	0.7400		TNM stage	(9)
Shao *et al*, 2020	hsa_circ_0065149	Tissues	Down	Diagnosis and prognosis biomarker	0.79	0.62	0.7690	10.190	Tumor diameter, perineural invasion and overall survival time	(10)
Xu *et al*, 2020	circ_0004771	Plasma	Up	Diagnosis and prognosis	0.68	0.79	0.8310	-	Differentiation grade, Lymph node metastasis, TNM stage and	(11)

				biomarker						T stage
Yu *et al*, 2020	hsa_circ_0067582	Tissues	Down	Diagnosis and prognosis biomarker	0.67	0.61	0.6937	-	Tumor diameter and carbohydrate antigen 19-9	(12)
Zhang *et al*, 2020	hsa_circ_0001811	Tissues	Down	Diagnosis biomarker	0.50	0.81	0.6580	-	CEA, tissue differentiation, and lymph node metastasis	(13)
		Plasma			0.91	0.52	0.7470	-	CA19-9, lymph node metastasis, distant metastasis, and age	
Zhang *et al*, 2020	circ_0026344	Tissues	Down	Diagnostic biomarker	-	-	-	-	Tumor size, lymph node metastasis, TNM stage, invasive depth and overall survival time	(14)
Tang *et al*, 2021	circ_0049447	Tissues	Down	Diagnosis biomarker	0.82	0.77	0.8380	-	Proliferation, migration, invasion and EMT	(15)
Yao and Xie, 2021	hsa_circ_0006470	Tissues	Down	Diagnosis biomarker	0.73	0.75	0.7830	10.740	TNM stage and invasion	(16)
Ye *et al*, 2021	hsa_circ_0001874	Tissues	Down	Diagnostic and prognosis biomarker	0.62	0.68	0.6730	-	Cell differentiation, tumor stage, invasion, lymphatic metastasis and CEA level	(17)

circRNA, circular RNA; AUC, area under the curve; TNM, Tumor-Node-Metastasis; CEA, carcinoembryonic antigen; AJCC, American Joint Committee on Cancer; EMT, epithelial-mesenchymal transition.

References

1. Tang W, Fu K, Sun H, Rong D, Wang H and Cao H: CircRNA microarray profiling identifies a novel circulating biomarker for detection of gastric cancer. Mol Cancer 17: 137, 2018.
2. Zhao Q, Chen S, Li T, Xiao B and Zhang X: Clinical values of circular RNA 0000181 in the screening of gastric cancer. J Clin Lab Anal 32: e22333, 2018.
3. Rong D, Dong C, Fu K, Wang H, Tang W and Cao H: Upregulation of circ_0066444 promotes the proliferation, invasion, and migration of gastric cancer cells. Onco Targets Ther 11: 2753-2761, 2018.
4. Cai J, Chen Z and Zuo X: circSMARCA5 Functions as a Diagnostic and Prognostic Biomarker for Gastric Cancer. Dis Markers 2019: 2473652, 2019.
5. Lu J, Zhang PY, Xie JW, Wang JB, Lin JX, Chen QY, Cao LL, Huang CM, Li P and Zheng CH: Hsa_circ_0000467 promotes cancer progression and serves as a diagnostic and prognostic biomarker for gastric cancer. J Clin Lab Anal 33: e22726, 2019.
6. Lu J, Zhang PY, Xie JW, Wang JB, Lin JX, Chen QY, Cao LL, Li P, Zheng CH and Huang CM: Circular RNA hsa_circ_0006848 Related to Ribosomal Protein L6 Acts as a Novel Biomarker for Early Gastric Cancer. Dis Markers 2019: 3863458, 2019.
7. Lu R, Shao Y, Tao X, Ye G, Xiao B and Guo J: Clinical significances of hsa_circ_0067582 and hsa_circ_0005758 in gastric cancer tissues. J Clin Lab Anal 33: e22984, 2019.
8. Yang L, Yu Y, Yu X, Zhou J, Zhang Z, Ying S, Guo J and Yan Z: Downregulated Expression of hsa_circ_0005556 in Gastric Cancer and Its Clinical Significance. Dis Markers 2019: 2624586, 2019.
9. Wei J, Wei W, Xu H, Wang Z, Gao W, Wang T, Zheng Q, Shu Y and De W: Circular RNA hsa_circRNA_102958 may serve as a diagnostic marker for gastric cancer. Cancer Biomark 27: 139-145, 2020.
10. Shao Y, Tao X, Lu R, Zhang H, Ge J, Xiao B, Ye G and Guo J: Hsa_circ_0065149 is an Indicator for Early Gastric Cancer Screening and Prognosis Prediction. Pathol Oncol Res 26: 1475-1482, 2020.
11. Xu Y, Kong S, Qin X and Ju S: Comprehensive Assessment of Plasma Circ_0004771 as a Novel Diagnostic and Dynamic Monitoring Biomarker in Gastric Cancer. Onco Targets Ther 13: 10063-10074, 2020.
12. Yu X, Ding H, Yang L, Yu Y, Zhou J, Yan Z and Guo J: Reduced expression of circRNA hsa_circ_0067582 in human gastric cancer and its potential diagnostic values. J Clin Lab Anal 34: e23080, 2020.
13. Zhang H, Li Z, Ruan Y, Sun W and Yu R: Low expression of hsa_circ_0001811 in gastric cancer and its role in clinical diagnosis. J Clin Lab Anal e23642, 2020.
14. Zhang X, Zhang L, Cui L, Chen M, Liu D and Tian J: Expression of circRNA circ_0026344 in gastric cancer and its clinical significance. Int J Clin Exp Pathol 13: 1017-1023, 2020.
15. Tang KW, Guo ZX, Wu ZH, Zhou C, Sun J, Wang X, Song YX and Wang ZN: Circ_0049447 acts as a tumor suppressor in gastric cancer through reducing proliferation, migration, invasion, and epithelial-mesenchymal transition. Chin Med J (Engl) 2021.
16. Yao L and Xie Y: Down-regulation of hsa_circ_0006470 predicts tumor invasion: A new biomarker of gastric cancer. J Clin Lab Anal e23879, 2021.
17. Ye Q, Qi C, Xi M and Ye G: Circular RNA hsa_circ_0001874 is an indicator for gastric cancer. J Clin Lab Anal e23851, 2021.