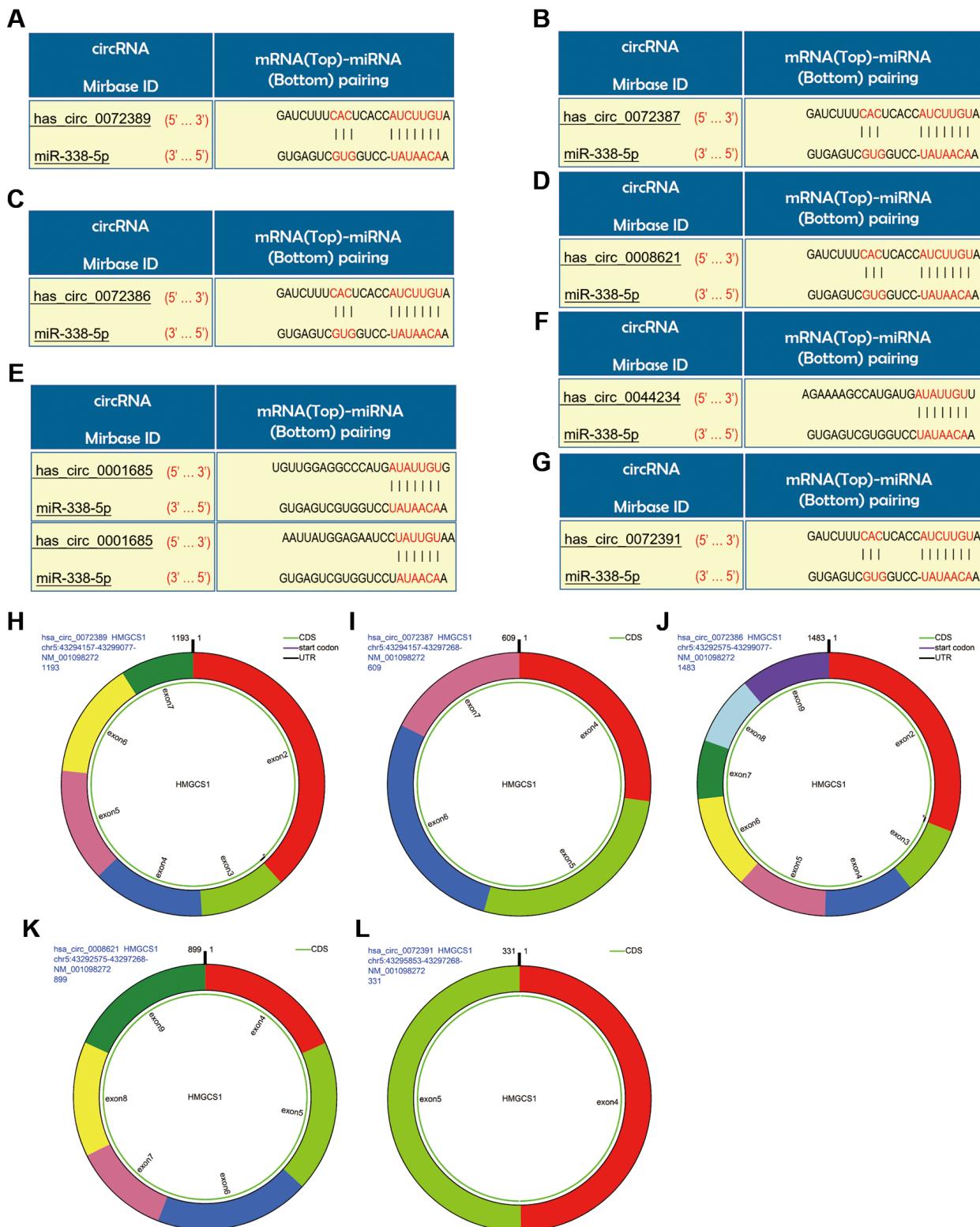


SUPPLEMENTARY FIGURES



Supplementary Figure 1. (A-G) Binding site between hsa_circ_0072389, hsa_circ_0072386, hsa_circ_0008621, hsa_circ_0072387, hsa_circ_0072391, hsa_circ_0044234, hsa_circ_0001685 with miR-338-5p. (H-L) Exon composition, host gene information, chromosome location information of hsa_circ_0072389, hsa_circ_0072386, hsa_circ_0008621, hsa_circ_0072387, hsa_circ_0072391.

hsa_circ_007389
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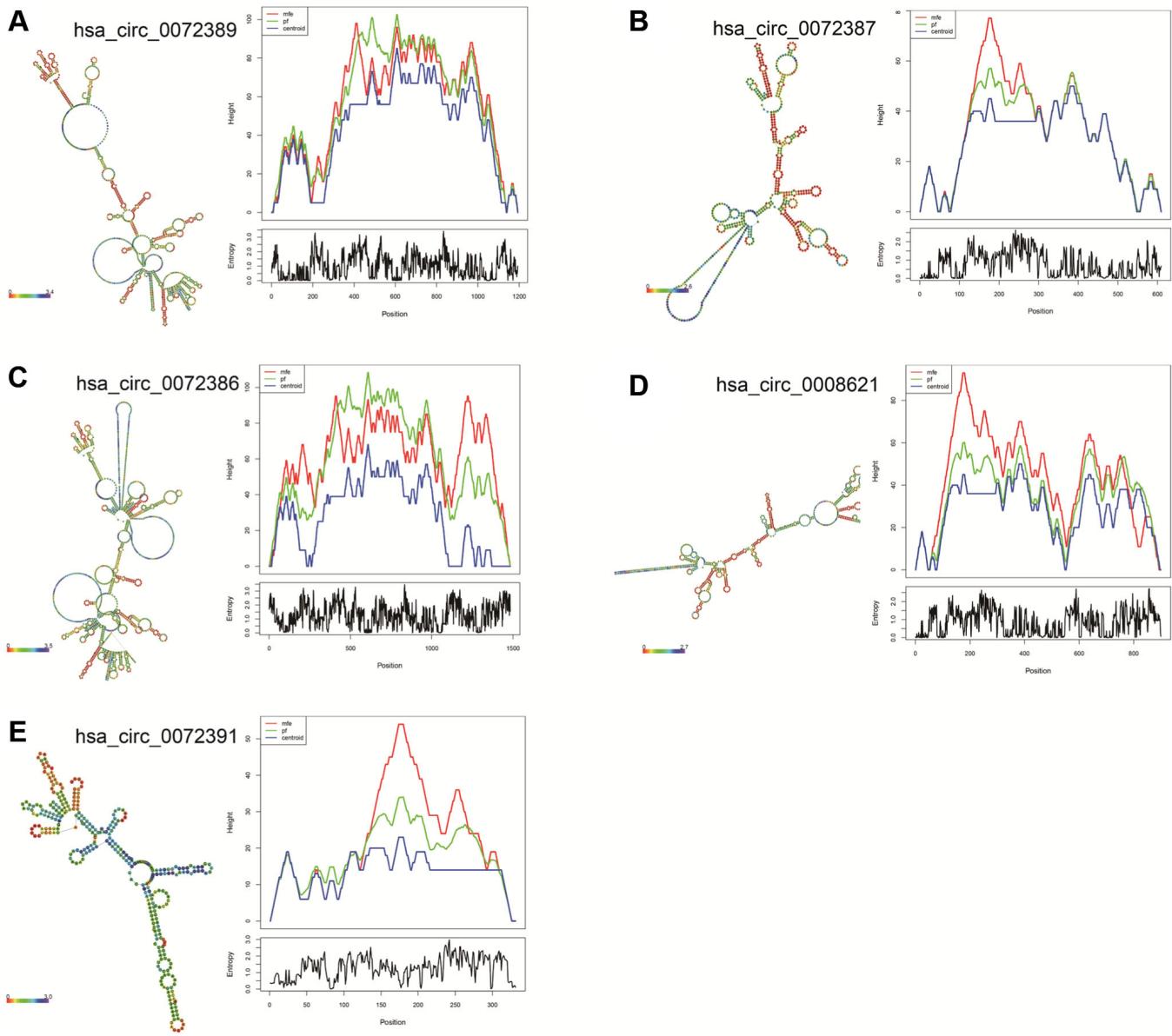
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hsa_circ_0072386
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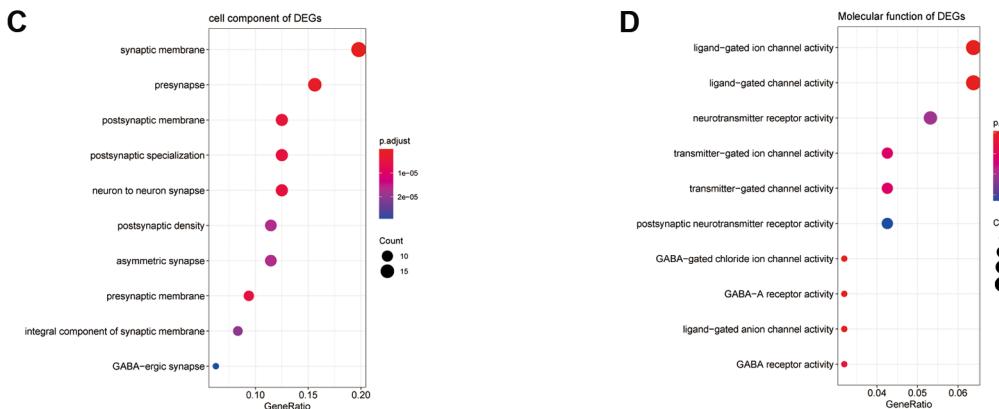
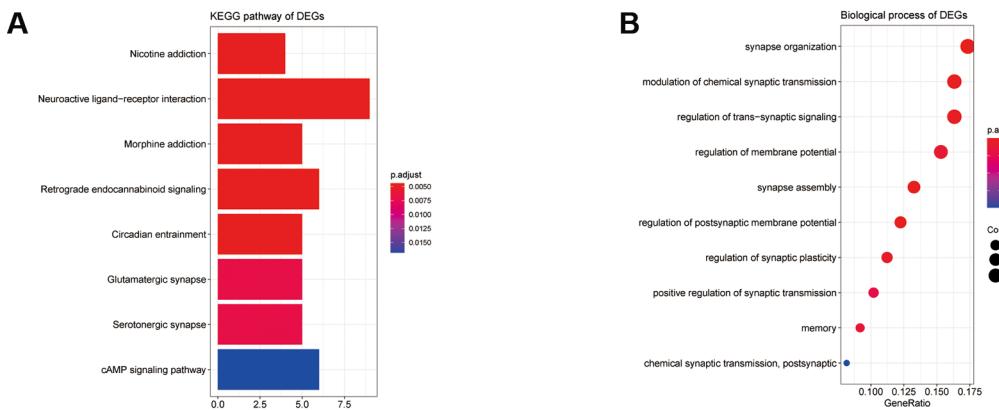
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GAG

hsa_circ_0072391
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Supplementary Figure 2. The sequence of hsa_circ_0072389, hsa_circ_0072387, hsa_circ_0072386, hsa_circ_0008621, hsa_circ_0072391.



Supplementary Figure 3. The secondary structure and minimum free energy (MFE) structure of (A) hsa_circ_0072389, (B) hsa_circ_0072387, (C) hsa_circ_0072386, (D) hsa_circ_0008621, (E) hsa_circ_0072391.



E

| circRNA Mirbase ID | mRNA(Top)-miRNA (Bottom) pairing |
|----------------------------------|-------------------------------------|
| <u>IKBIP</u> (3' ... 5') | UUAAUUCACCUAU <u>AUAUUGUA</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |

F

| mRNA Mirbase ID | mRNA(Top)-miRNA (Bottom) pairing |
|----------------------------------|-------------------------------------|
| <u>CCBE1</u> (3' ... 5') | UCUAGUAGACUUUA <u>AUAUUGUA</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |

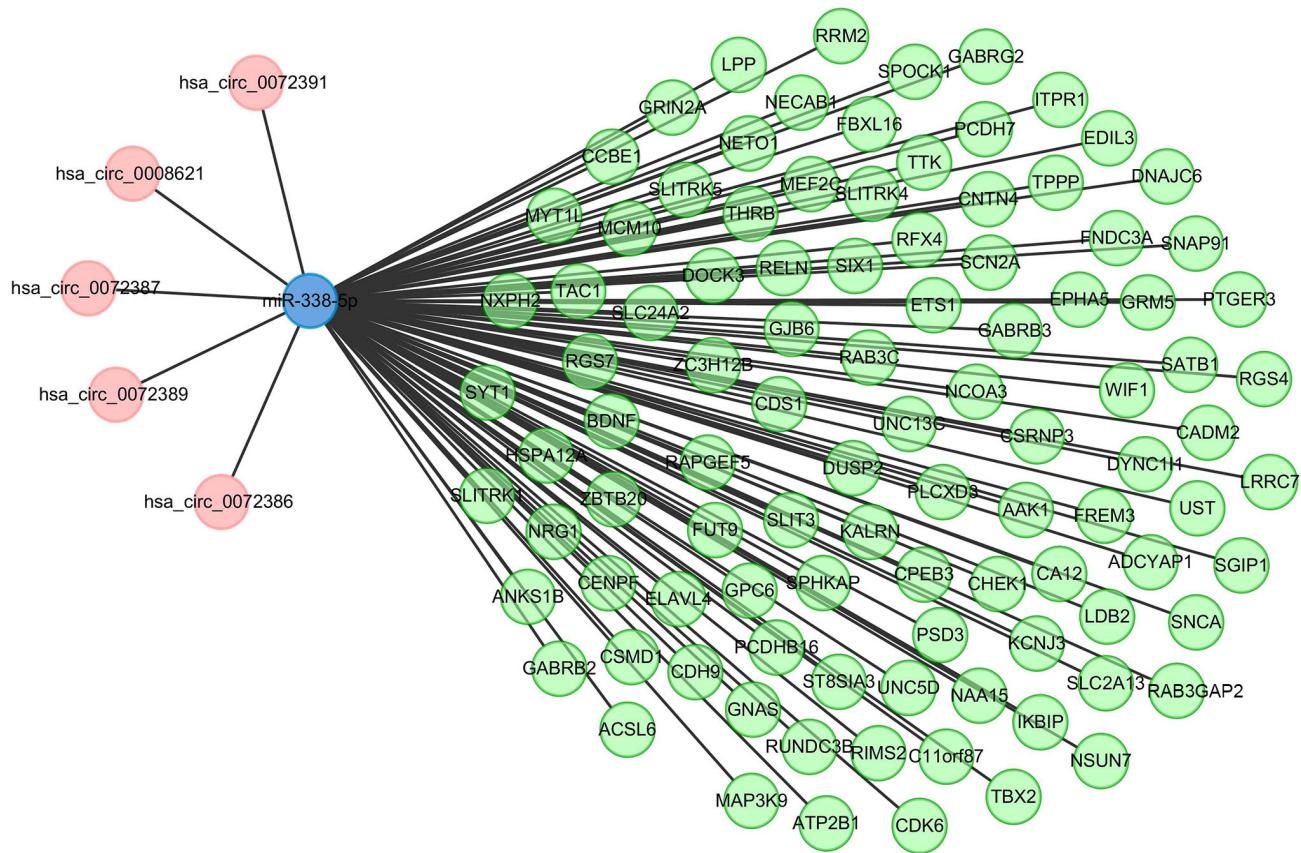
G

| mRNA Mirbase ID | mRNA(Top)-miRNA (Bottom) pairing |
|----------------------------------|-------------------------------------|
| <u>RGS4</u> (3' ... 5') | CGUGUUUAUUAU <u>AUAUUGUU</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |
| <u>RGS4</u> (3' ... 5') | GAAAGUACAAACUGA <u>AUAUUGUU</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |

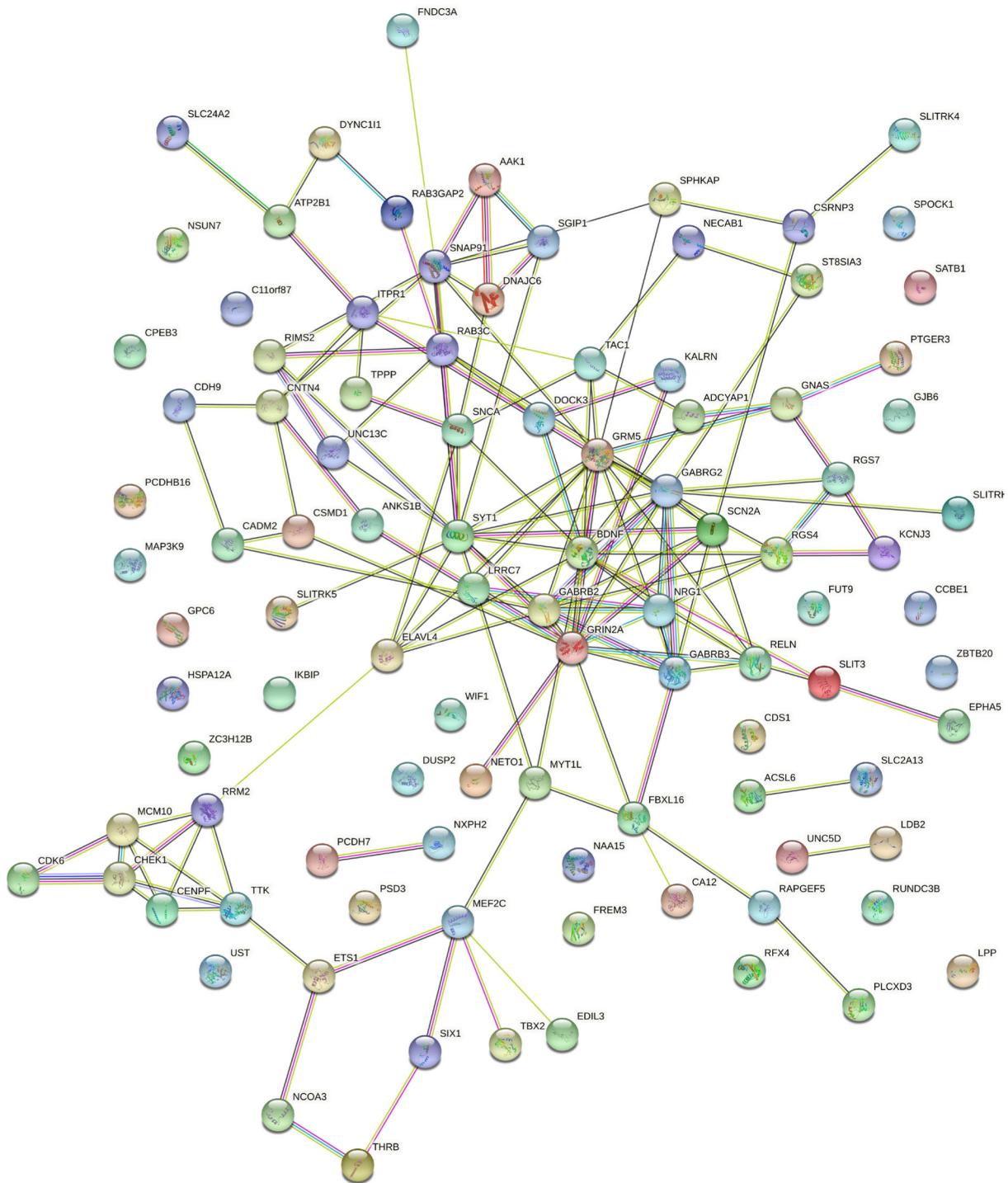
H

| mRNA Mirbase ID | mRNA(Top)-miRNA (Bottom) pairing |
|----------------------------------|-------------------------------------|
| <u>NRG1</u> (3' ... 5') | UCAUCUCCAGUGAGC <u>AUAUUGUU</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |
| <u>NRG1</u> (3' ... 5') | UUCUUUUGUA <u>AUAUUGUA</u> |
| <u>miR-338-5p</u> (5' ... 3') | GUGAGUCGUGGUCC <u>UAUAACAA</u> |

Supplementary Figure 4. (A) Pathways involved in the 100 mRNAs analysis by KEGG. (B–D) Biological process, cell component, and molecular function of the 100 mRNAs by GO analysis. (E–H) Binding site between CCBE1, IKBIP, NRG1, and RGS4 with miR-338-5p.

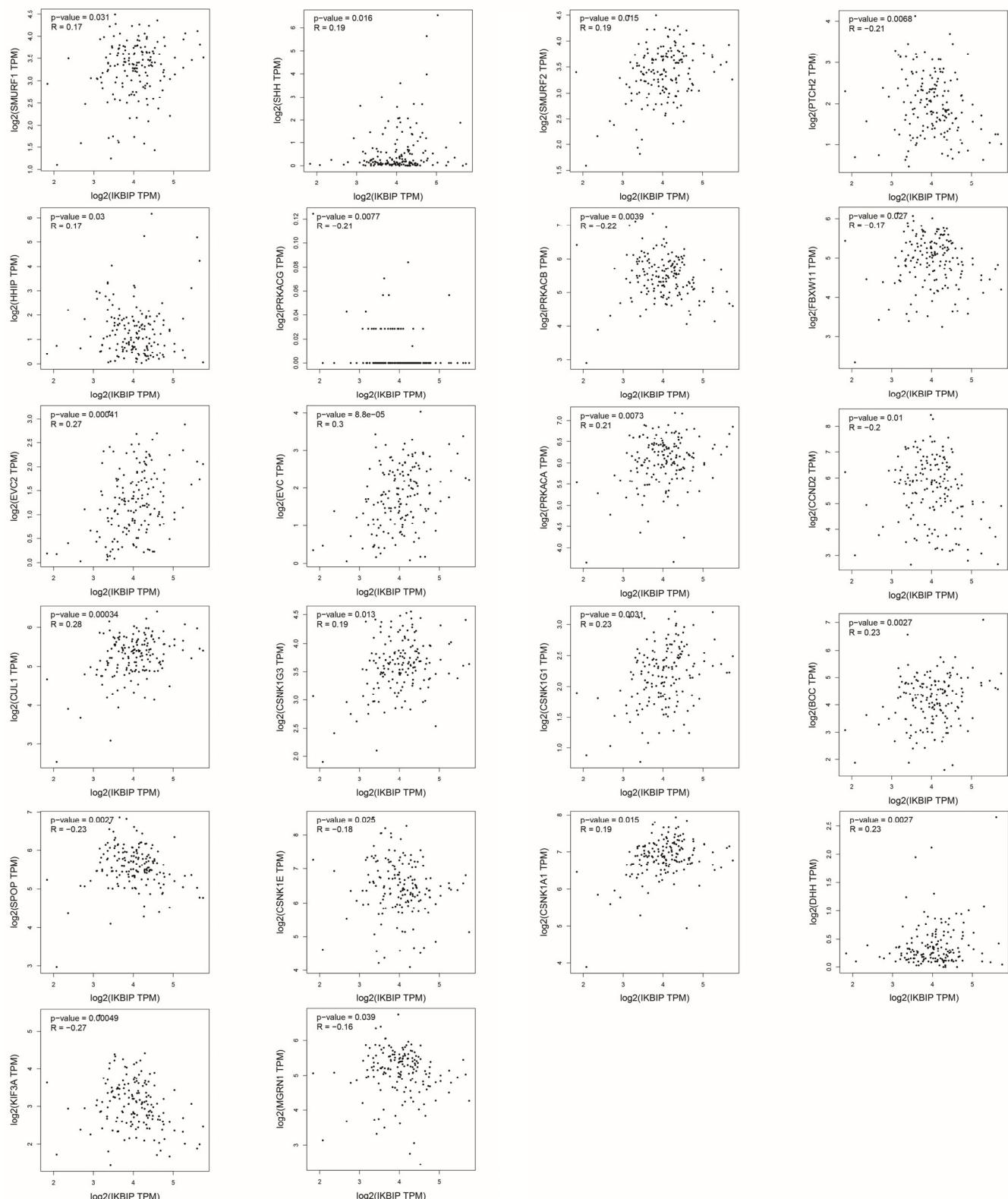


Supplementary Figure 5. circRNA-miRNA-mRNA network about hsa_circ_0072389, hsa_circ_0072386, hsa_circ_0008621, hsa_circ_0072387, hsa_circ_0072391, miR-338-5p, and the 100 mRNAs that might bind to miR-338-5p.



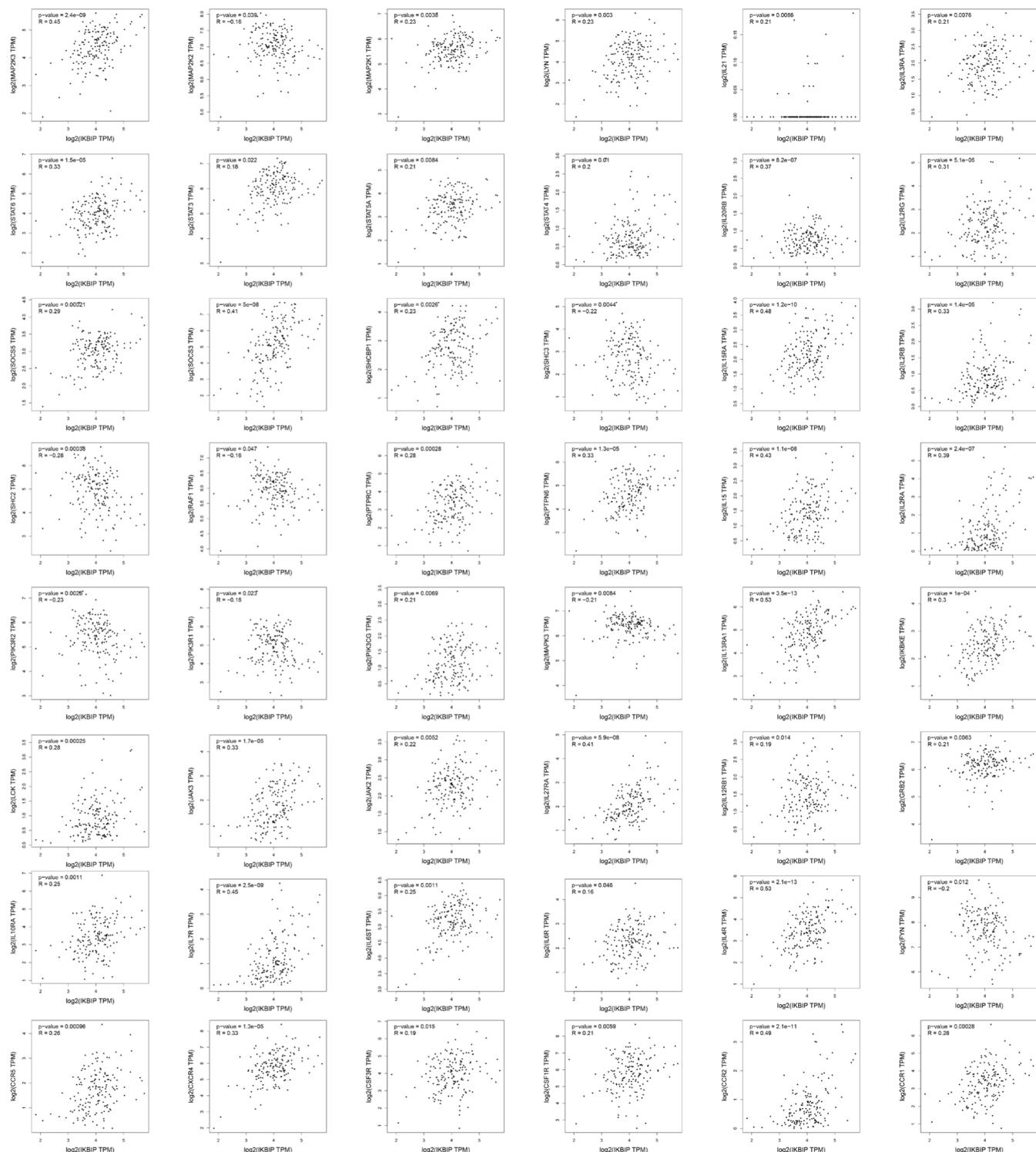
Supplementary Figure 6. PPI network about 100 mRNAs that might bind to miR-338-5p.

Hedgehog signaling pathway



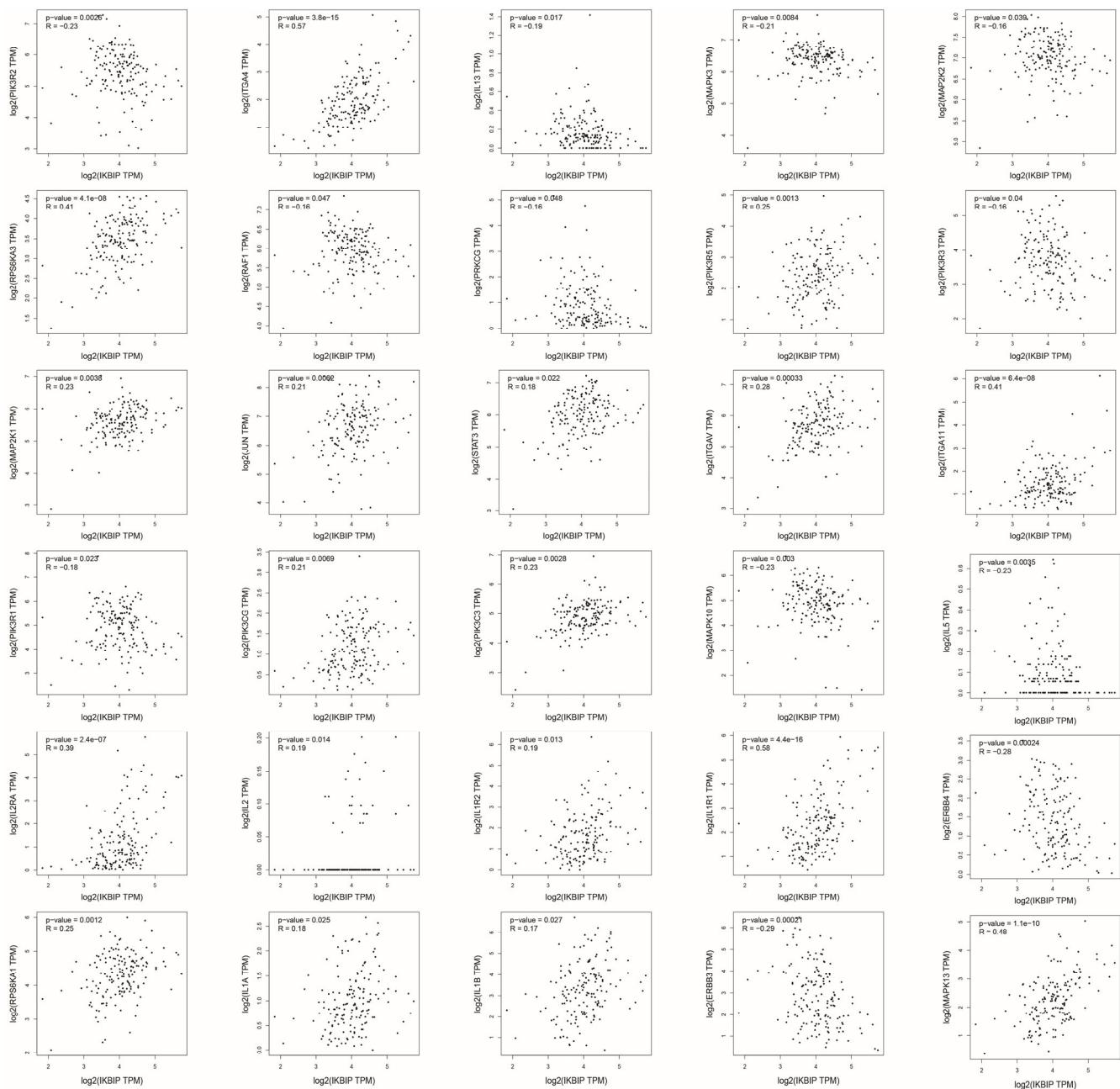
Supplementary Figure 7. Scatter plot shown genes in Hedgehog signaling pathway related to IKBIP expression in glioma.

JAK/STAT signaling pathway



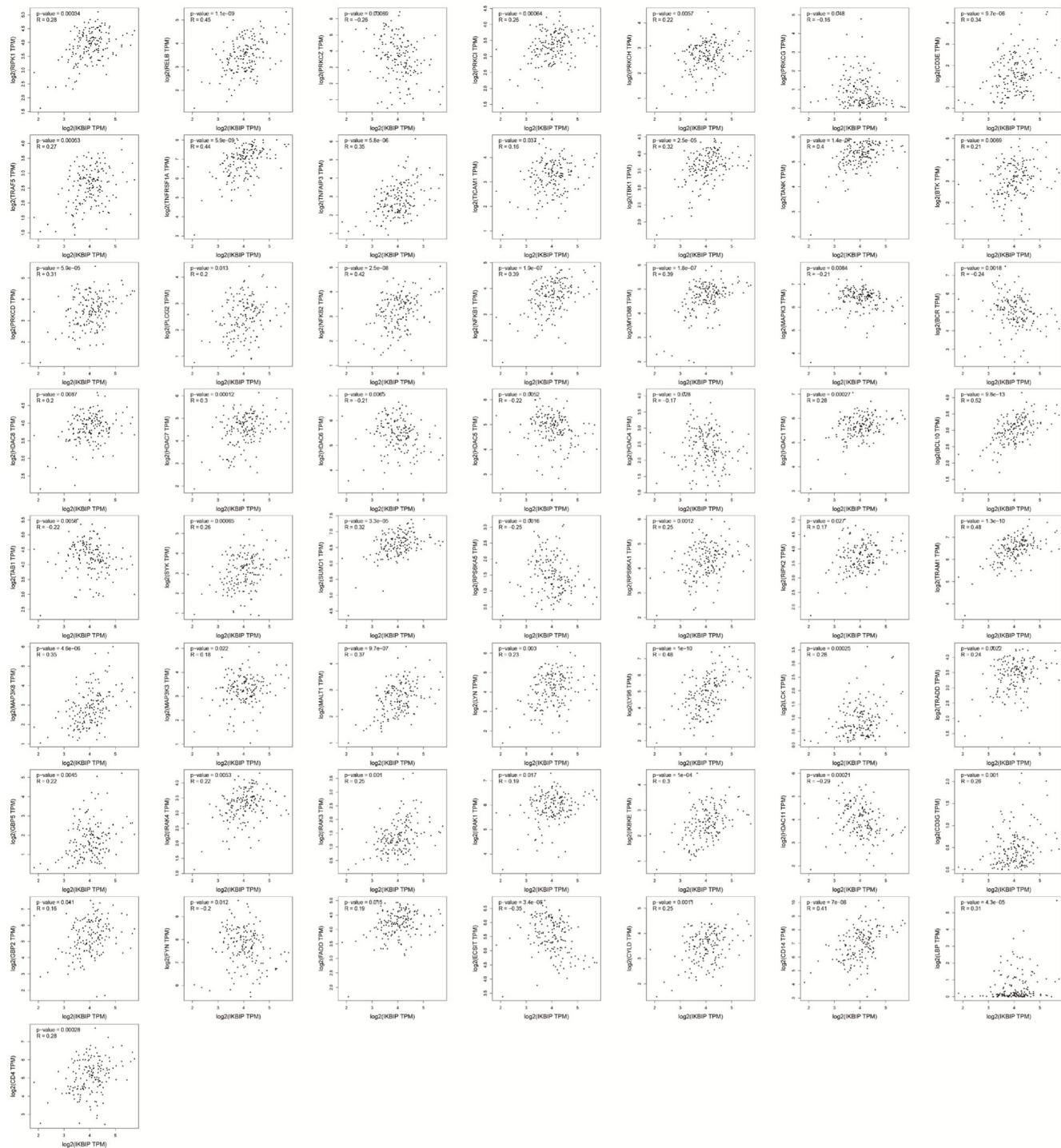
Supplementary Figure 8. Scatter plot shown genes in JAK/STAT signaling pathway related to IKBIP expression in glioma.

MAPK signaling pathway



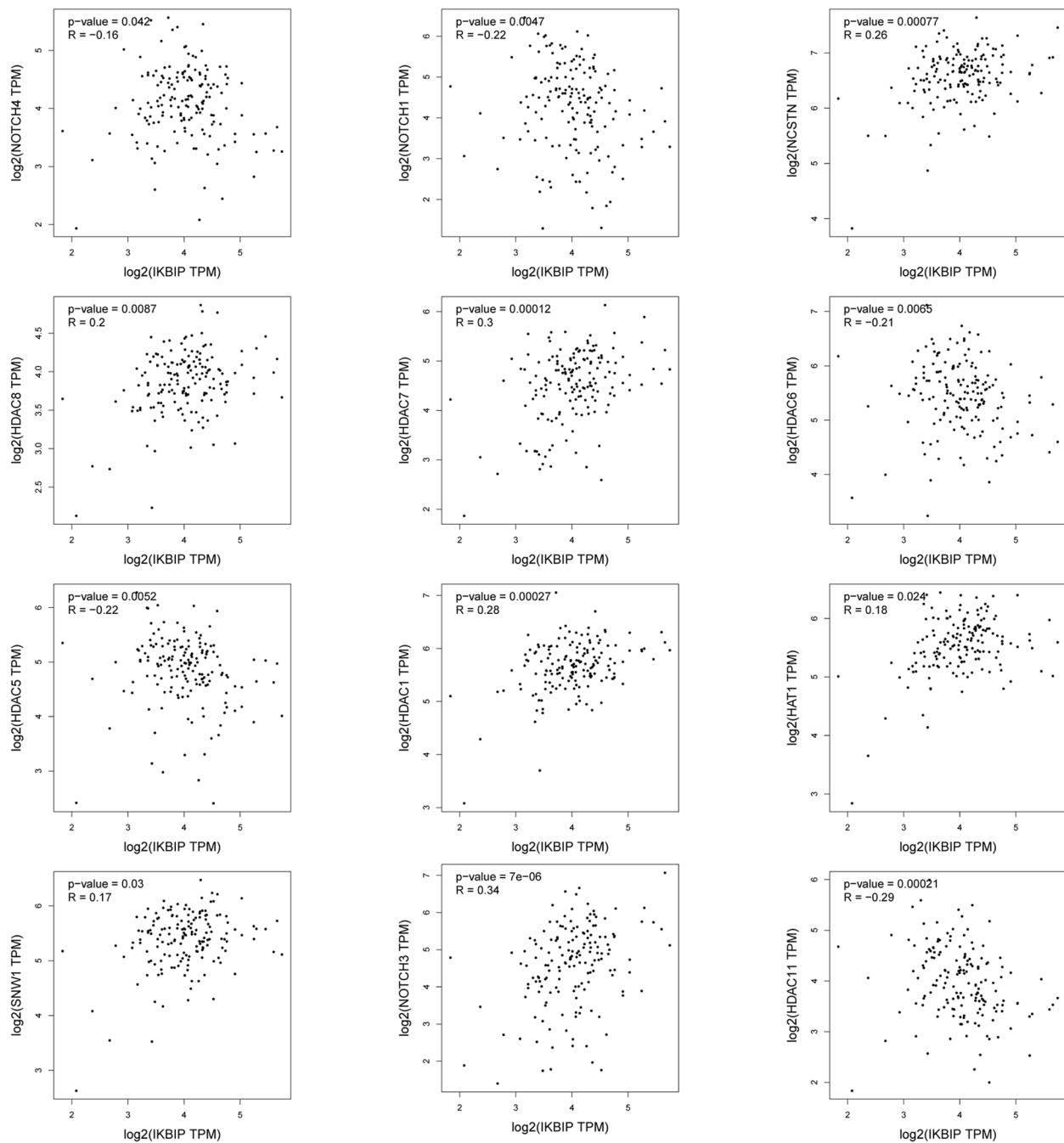
Supplementary Figure 9. Scatter plot shown genes in MAPK signaling pathway related to IKBIP expression in glioma.

NF-κB signaling pathway



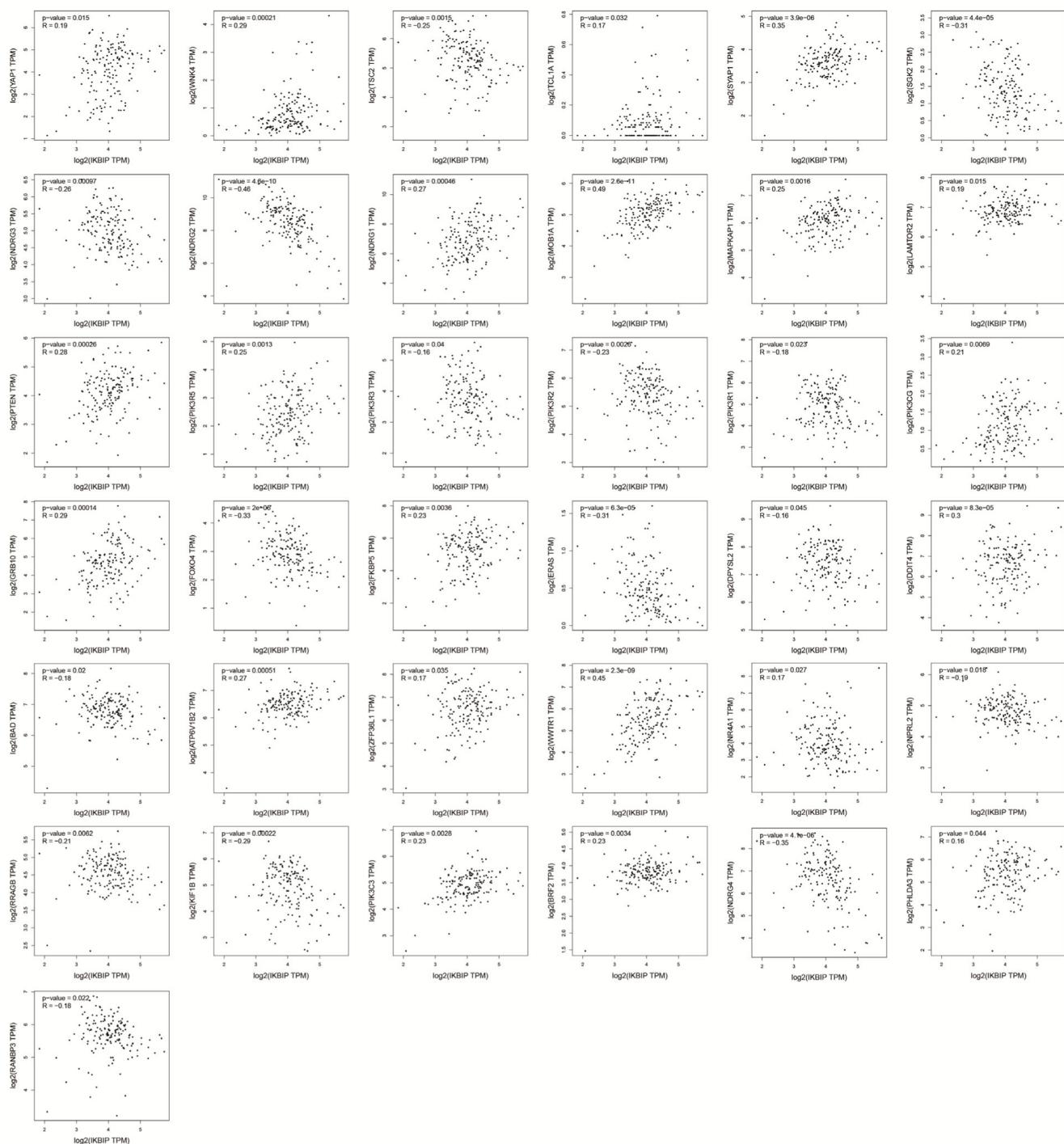
Supplementary Figure 10. Scatter plot shown genes in NF-κB signaling pathway related to IKBIP expression in glioma.

Notch signaling pathway



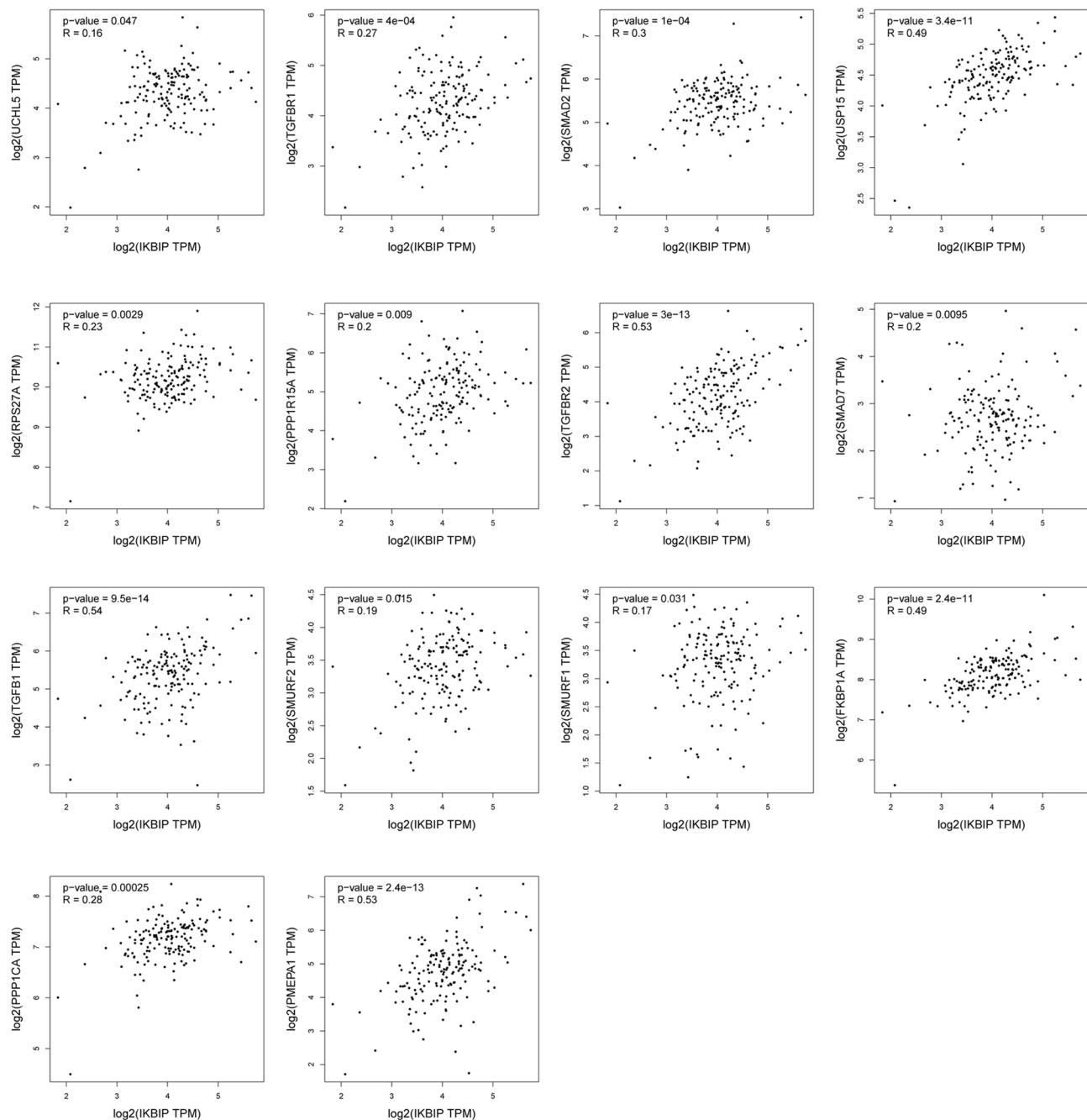
Supplementary Figure 11. Scatter plot shown genes in Notch signaling pathway related to IKBIP expression in glioma.

PI3K/Akt signaling pathway



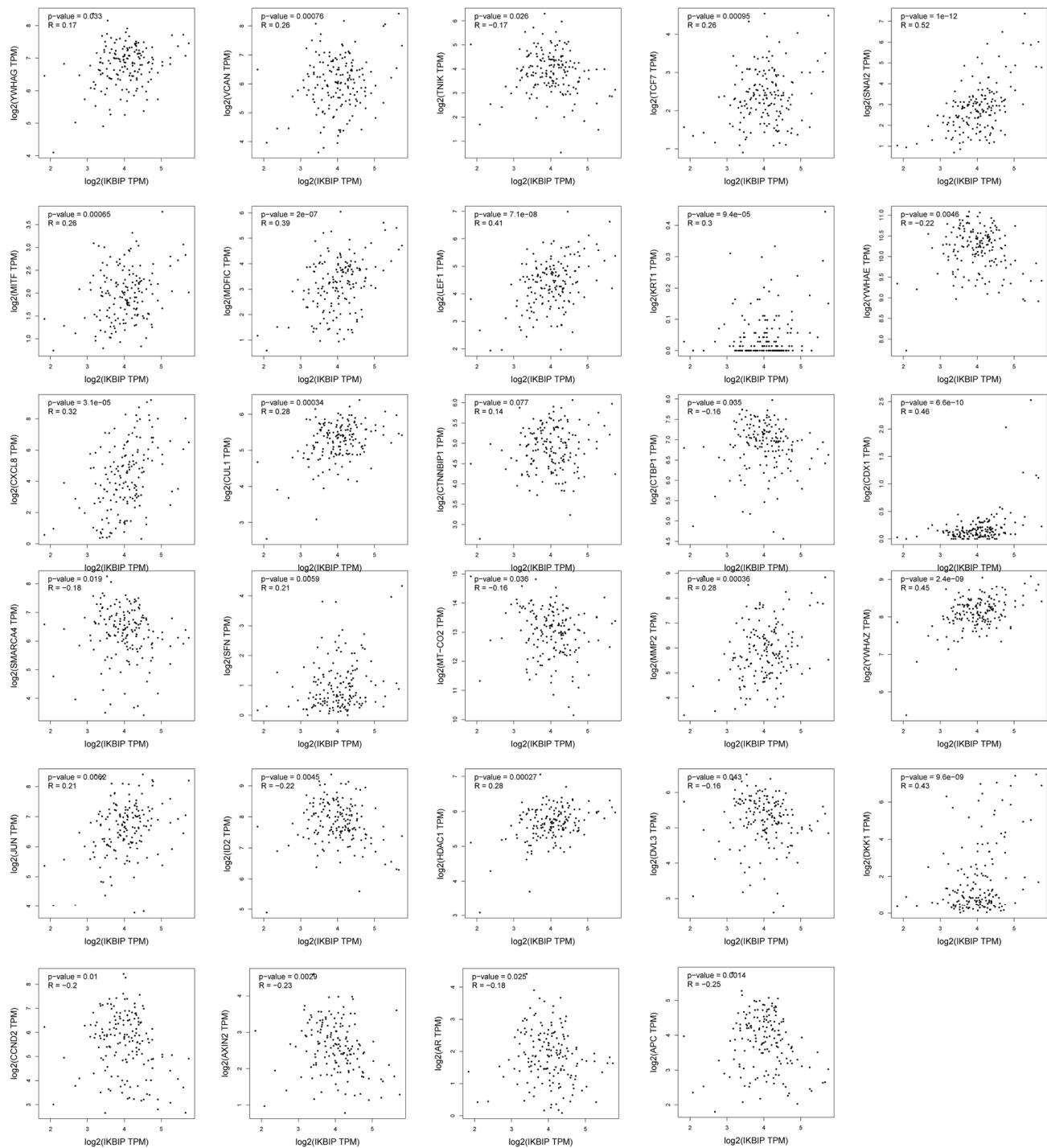
Supplementary Figure 12. Scatter plot shown genes in PI3K/Akt signaling pathway related to IKBIP expression in glioma.

TGF β /SMAD signaling pathway



Supplementary Figure 13. Scatter plot shown genes in TGF β /SMAD signaling pathway related to IKBIP expression in glioma.

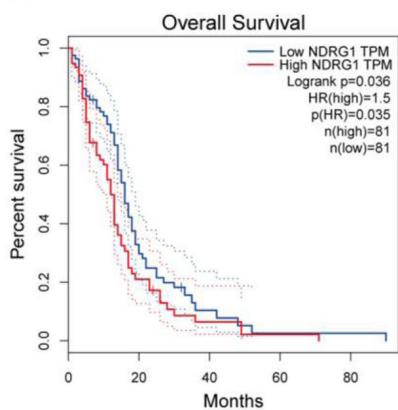
Wnt/β-catenin signaling pathway



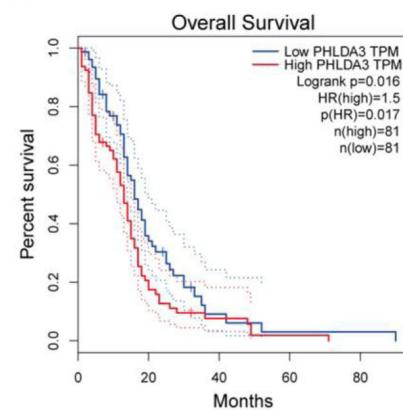
Supplementary Figure 14. Scatter plot shown genes in Wnt/β-catenin signaling pathway related to IKBIP expression in glioma.

signaling pathways

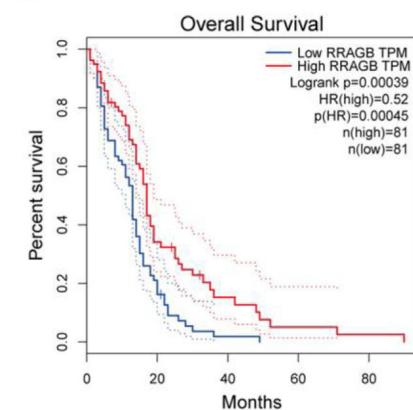
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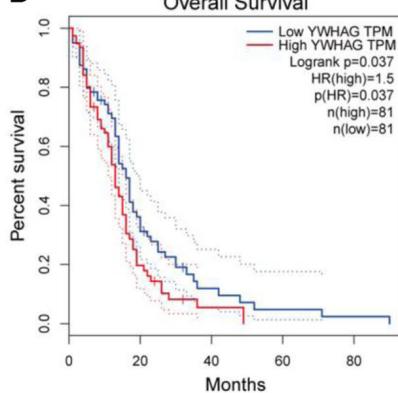
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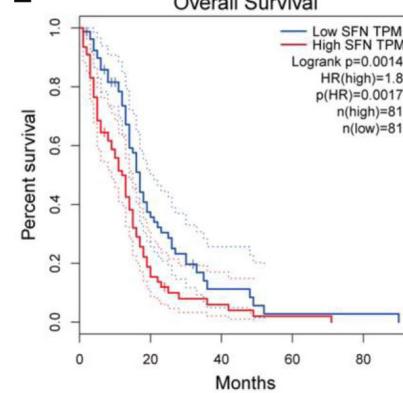
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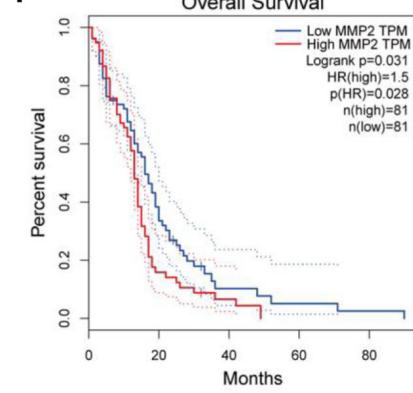
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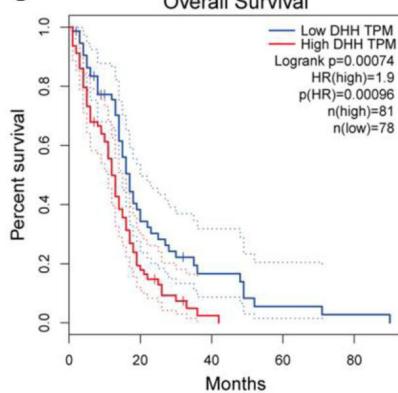
E



F



G



Supplementary Figure 15. Survival analysis shown the effect of genes related to IKBIP in the (A–C) PI3K/Akt signaling pathway, (D–F) Wnt/β-catenin signaling pathway, and (G) Hedgehog signaling pathway to glioma patients.