**Supplementary Table S1. shRNAs used in lentivirus expression vector construction for gene knockdown**

|  |  |  |
| --- | --- | --- |
| KIF4A sh1 | Forward | CCGGACAACGGGAGGTTGCAGATAACTCGAGTTATCTGCAACCTCCCGTTGTTTTTTG |
| Reverse | AATTCAAAAAACAACGGGAGGTTGCAGATAACTCGAGTTATCTGCAACCTCCCGTTGT |
| KIF4A sh2 | Forward | CCGGACAGGTCAGCAAACTTGAAAGCTCGAGCTTTCAAGTTTGCTGACCTGTTTTTTG |
| Reverse | AATTCAAAAAACAGGTCAGCAAACTTGAAAGCTCGAGCTTTCAAGTTTGCTGACCTGT |
| KIF4A sh3 | Forward | CCGGTGAAGTGCGTGGTCAAGTTTCCTCGAGGAAACTTGACCACGCACTTCATTTTTG |
| Reverse | AATTCAAAAATGAAGTGCGTGGTCAAGTTTCCTCGAGGAAACTTGACCACGCACTTCA |

**Supplementary Table S2. Primary and secondary antibodies.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Antibody** | **Vendor** | **Cat. No.** | **Species** | **Dilution** |
| KIF4A | ABclonal | A10193 | Rabbit | 1：1000 |
| TPX2 | ABclonal | A18327 | Rabbit | 1：1001 |
| ASPM | ABclonal | A18147 | Rabbit | 1：1002 |
| TOP2A | ABclonal | A0726 | Rabbit | 1：1003 |
| Ubiquitin | Proteintech | 10201-2-AP | Rabbit | 1：1000 |
| BUB1 | ABclonal | A1929 | Rabbit | 1：1000 |
| KIF23 | ABclonal | A4896 | Rabbit | 1：1000 |
| KIF11 | ABclonal | A7907 | Rabbit | 1：1000 |
| KIF20A | ABclonal | A15377 | Rabbit | 1：1000 |
| PRC1 | Proteintech | 15617-1-AP | Rabbit | 1：1000 |
| RACGAP1 | Proteintech | 13739-1-AP | Rabbit | 1：1000 |
| Bax | Proteintech | 50599-2-Ig | Rabbit | 1：1000 |
| BCL2 | Proteintech | 12789-1-AP | Rabbit | 1：1000 |
| Caspase 3 | Proteintech | 19677-1-AP | Rabbit | 1：1000 |
| CDK1 | Proteintech | 10762-1-AP | Rabbit | 1：1000 |
| Cyclin B1 | Proteintech | 55004-1-AP | Rabbit | 1：1000 |
| ATM | ABclonal | A5908 | Rabbit | 1：1000 |
| Phospho-ATM (S1981) | Abmart | T55111 | Rabbit | 1：1000 |
| Phospho-Chk2 (Thr68) | Abmart | TP56120 | Rabbit | 1：1000 |
| CHEK2 | Proteintech | 13954-1-AP | Rabbit | 1：1000 |
| Phospho-Histone H2A.X (S139) | Abmart | T56572 | Rabbit | 1：1000 |
| Histone H2A.X | Proteintech | 10856-1-AP | Rabbit | 1：1000 |
| HRP Goat Anti-Rabbit IgG (H+L) | ABclonal | AS014 | Goat | 1：5000 |
| HRP Goat Anti-Mouse IgG (H+L) | ABclonal | AS003 | Goat | 1：5000 |
| GAPDH | ABclonal | AC002 | Mouse | 1:10000 |
| β-Actin | ABclonal | AC004 | Mouse | 1:10000 |

**Supplementary Table S3. qPCR primers.**

|  |  |  |
| --- | --- | --- |
| **Gene symbol** | **Direction** | **Sequence (5’-3’)** |
| KIFC1 | Forward | GACGCCCTGCTTCATCTG |
| Reverse | CCAGGTCCACAAGACTGAGG |
| KIF2C | Forward | TCC AGG CAA TTT ATC CAA GG |
| Reverse | CCA GTC TGG TCC TTG CTG TA |
| KIF1A | Forward | GCTGGCTTGGTGGTTATTGT |
| Reverse | GACCAGACTCTCAGCTTGGG |
| KIF4A | Forward | AATGAGCATGAGGATGGTGATG |
| Reverse | TCCGTTCAACAGTGCCCAAG |
| KIF18B | Forward | TTC AGA GTC AAT CCC TGT GC |
| Reverse | GAT TCC CAG GGT GTG CAG |
| KIF23 | Forward | CCA AAT GGT AGT CGA AAA CG |
| Reverse | CTC TCA TCT CCA CAG CCA CA |
| KIF26A | Forward | GCCTCCTTCTTCATAAGGGCTA |
| Reverse | GGGTTGTCCTTGGTCTTGGA |
| KIF11 | Forward | GATGGACGTAAGGCAGCTCA |
| Reverse | TGTGGTGTCGTACCTGTTGG |
| KIF18A | Forward | GAGAGGCACATGAAGAGAAGT |
| Reverse | TGTTTTCCGGACGTACACGA |
| KIF14 | Forward | ATGGTCAGACTGGCTCTGGA |
| Reverse | CCCTCACTCTCAGTGGTTGC |
| KIF20A | Forward | GGGAACAGTGGTGCAGTGAA |
| Reverse | CTGATGGGCCACTGACTGTT |
| KIF15 | Forward | ACCCGGCTGCAAAACTGAG |
| Reverse | CGTGGAGGACAGCACAGATA |
| TPX2 | Forward | AGGGCCTTTCTGGTTCTCTAGT |
| Reverse | GGATTTGCCTTATGCACCAGT |
| CDK1 | Forward | CCCTTTAGCGCGGATCTACC |
| Reverse | CATGGCTACCACTTGACCTGT |
| GAPDH | Forward | CCA GTC TGG TCC TTG CTG TA |
| Reverse | GAGTCCTTCCACGATACCAA |

**Supplementary figures**



### Fig. S1. Differentially expressed Kinesins from public databases

(A-B) The heatmap of differentially expressed Kinesins in TCGA UCEC and GSE17025. Screen standard: discovery rate (FDR) p-value < 0.05 and | log2(Fold Change)| > 1.



### Fig. S2. GSEA enrichment analysis for KIF4A

(A-I) GSEA analysis for KIF4A in TCGA UCEC database using Molecular Signatures Database, and the number of permutations was set at 1,000. Values of |NES| > 1, p < 0.05, and FDR < 0.25 were considered statistically significant.



### Fig. S3. Assessment of the KIF4A-interacting proteins.

(A) The KIF4A-interacting proteins were examined by Western blot following by KIF4A knockdown in EC cells. (B) qPCR was performed to access the mRNA level of CDK1 in EC cells with KIF4A knockdown. t-test; \*\*\**P* < 0.001; \*\**P* < 0.01. (C) Flow cytometry apoptosis assay showed that TPX2 overexpression could rescue the increased apoptosis rates of EC cells induced by KIF4A knockdown. t-test; \*\*\**P* < 0.001; \*\**P* < 0.01.