

**Supplementary Table 2: Candidate driver genes of Hereditary gastric cancer**

| Gene     | P-value | Gene       | P-value | Gene       | P-Value |
|----------|---------|------------|---------|------------|---------|
| 'UBE2Q1' | 0       | 'UBA2'     | 0       | 'UBE2K'    | 0.004   |
| 'CCND1'  | 0       | 'UBA3'     | 0       | 'BUB1'     | 0.005   |
| 'CDKN1C' | 0       | 'UBE2H'    | 0       | 'EIF4E2'   | 0.005   |
| 'DSP'    | 0       | 'ANG'      | 0       | 'ARHGEF4'  | 0.005   |
| 'ANAPC2' | 0       | 'UBE2M'    | 0       | 'PPP5C'    | 0.005   |
| 'ANAPC7' | 0       | 'UBE2C'    | 0       | 'TSSK1B'   | 0.005   |
| 'LEF1'   | 0       | 'EIF4EBP1' | 0       | 'MAPK8IP3' | 0.005   |
| 'TP73'   | 0       | 'MKNK2'    | 0       | 'HERC1'    | 0.006   |
| 'CDC45'  | 0       | 'FBXO4'    | 0       | 'DUSP10'   | 0.006   |
| 'CTNNB1' | 0       | 'CTNND1'   | 0       | 'MAP4K1'   | 0.007   |
| 'RPTOR'  | 0       | 'DSG2'     | 0       | 'TLR1'     | 0.007   |
| 'CDK18'  | 0       | 'DSG3'     | 0       | 'CDK1'     | 0.008   |
| 'TRIP12' | 0       | 'TSSK4'    | 0       | 'MAPK8IP2' | 0.008   |
| 'E2F2'   | 0       | 'TP53'     | 0       | 'ANAPC1'   | 0.01    |
| 'SFTPD'  | 0       | 'RB1CC1'   | 0       | 'CDC6'     | 0.01    |
| 'HDAC1'  | 0       | 'HSPB1'    | 0       | 'IRAK4'    | 0.011   |
| 'HUWE1'  | 0       | 'PKN1'     | 0       | 'SAE1'     | 0.011   |
| 'VCL'    | 0       | 'DUSP16'   | 0       | 'RNF7'     | 0.012   |
| 'PKP1'   | 0       | 'MRC1'     | 0       | 'DUSP7'    | 0.012   |
| 'DNAJA2' | 0       | 'MYC'      | 0       | 'RAPGEF2'  | 0.013   |
| 'SNAI1'  | 0       | 'DDIT4'    | 0       | 'HERC2'    | 0.013   |
| 'DBF4'   | 0       | 'PIM2'     | 0       | 'PTEN'     | 0.015   |
| 'MYLK'   | 0       | 'MAPKAPK5' | 0       | 'SKP2'     | 0.015   |
| 'NEK6'   | 0       | 'CDC25A'   | 0       | 'IRS1'     | 0.015   |
| 'CLDN7'  | 0       | 'STAG1'    | 0       | 'NR4A1'    | 0.015   |
| 'UBE2E1' | 0       | 'ACTB'     | 0       | 'MAP3K4'   | 0.016   |
| 'UBE2E2' | 0       | 'CDC20'    | 0       | 'TCF7L1'   | 0.016   |
| 'HDAC2'  | 0       | 'RFWD2'    | 0       | 'CDC23'    | 0.017   |
| 'ATM'    | 0       | 'MAPK15'   | 0       | 'MAP3K6'   | 0.019   |
| 'DNAJB1' | 0       | 'FZD8'     | 0       | 'ANAPC5'   | 0.02    |
| 'DNAJB6' | 0       | 'DUSP4'    | 0       | 'WNT4'     | 0.02    |
| 'FBXW8'  | 0       | 'DUSP1'    | 0       | 'PAK1'     | 0.021   |
| 'FBXW7'  | 0       | 'DUSP2'    | 0       | 'TSC2'     | 0.022   |
| 'NTF4'   | 0       | 'VAMP3'    | 0       | 'DUSP3'    | 0.022   |
| 'DUSP5'  | 0       | 'JUND'     | 0       | 'EEA1'     | 0.023   |
| 'LAMP1'  | 0       | 'UBOX5'    | 0       | 'ARVCF'    | 0.024   |
| 'DUSP6'  | 0       | 'RRAGD'    | 0       | 'PPM1B'    | 0.024   |
| 'CDK3'   | 0       | 'RRAGA'    | 0       | 'TLR6'     | 0.024   |
| 'CDK7'   | 0       | 'RAD21'    | 0       | 'HGS'      | 0.025   |
| 'CDK9'   | 0       | 'ORC6'     | 0       | 'CTNNA1'   | 0.025   |
| 'MAD2L1' | 0       | 'ORC2'     | 0       | 'RARA'     | 0.028   |
| 'NFYA'   | 0       | 'TTK'      | 0.001   | 'CUL5'     | 0.028   |
| 'CEBPA'  | 0       | 'PKP2'     | 0.001   | 'SGK1'     | 0.031   |
| 'AXIN2'  | 0       | 'DNAJB4'   | 0.001   | 'CDH3'     | 0.032   |
| 'AXIN1'  | 0       | 'AURKB'    | 0.001   | 'OXSR1'    | 0.032   |
| 'DVL1'   | 0       | 'PRKCD'    | 0.001   | 'APC2'     | 0.033   |
| 'FCGR2B' | 0       | 'MAGI2'    | 0.001   | 'E2F3'     | 0.033   |
| 'CTNNA2' | 0       | 'UBE2N'    | 0.001   | 'CDK6'     | 0.033   |
| 'CTNNA3' | 0       | 'SGK3'     | 0.001   | 'CUL7'     | 0.033   |
| 'CCNB3'  | 0       | 'WNT3'     | 0.001   | 'MAP4K4'   | 0.034   |
| 'CCNB1'  | 0       | 'LAMTOR3'  | 0.001   | 'CDH1'     | 0.035   |
| 'MAP3K8' | 0       | 'PLK2'     | 0.001   | 'DSC3'     | 0.037   |
| 'MAGI3'  | 0       | 'MAPK8IP1' | 0.001   | 'HERC4'    | 0.038   |
| 'WNK2'   | 0       | 'BRAF'     | 0.001   | 'ORC5'     | 0.038   |
| 'WNK4'   | 0       | 'WNT3A'    | 0.002   | 'PTPRJ'    | 0.04    |
| 'CTSS'   | 0       | 'RB1'      | 0.002   | 'DNAJA1'   | 0.044   |
| 'SMUG1'  | 0       | 'MAP3K3'   | 0.002   | 'TP63'     | 0.044   |
| 'PKP3'   | 0       | 'UBE2A'    | 0.002   | 'FZR1'     | 0.045   |
| 'KEAP1'  | 0       | 'RASA1'    | 0.002   | 'NEK9'     | 0.047   |
| 'JUP'    | 0       | 'WEE1'     | 0.003   |            |         |