**Supplementary File1 Sequences of shRNA and primers**

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| Name | Gene symbol (ID) | NCBI Reference Sequence | Sequence |
| shRNA targeting sequence: RAPSYN #1 | RAPSYN (5913) | NM\_005055.5 | GCATTGCAGGTGTGGACAAAG |
| shRNA targeting sequence: RAPSYN #2 | GGAGTGTTGTGAGGAGTCTAT |
| shRNA targeting sequence: RAPSYN #3 | TGCACGCCAGAGGCCCATTTA |
| shRNA targeting sequence: SRC #1 | SRC (6714) | NM\_005417.5 | GAGGGACCCTTCGAGATCATCACTT |
| shRNA targeting sequence: SRC #2 | CATCCTCAGGAACCAACAATT |
| shRNA targeting sequence: SRC #3 | CAGGTGTGGAGAGAGAGGCTTCAAT |
| shRNA targeting sequence: SRC #4 | GCGTCCATATTTAACATGTAA |
| shRNA targeting sequence: SRC #5 | GGTTGTAAATACTTTGCATATTGTC |
| h. RAPSYN RT-PCR Primers | RAPSYN (5913) | NM\_005055.5 | Forward: CGCTACAAGGAGATGCTGAAG |
| Reverse: CTTGCAGTAGGAGATGGTCTTG |
| h. ACTIN RT-PCR Primers | ACTB (60) | NM\_001101.5 | Forward: CTACAATGAGCTGCGTGTGGC |
| Reverse: CAGGTCCAGACGCAGGATGGC |
| h. GAPDH RT-PCR Primers | GAPDH (2597) | NM\_002046.7 | Forward: GCGTGACATTAAGGAGAAG |
| Reverse: GAAGGAAGGCTGGAAGAG |
| HA-NEDD8 △GG mutant primers | NEDD8 (4738) | NM\_006156.3 | Forward: GTTGGCTCTGAGAGCAGCTGGTGGTCTTAGGC |
| Reverse: GCCTAAGACCACCAGCTGCTCTCAGAGCCAAC |
| GFP-RAPSYN C366A mutant primers | RAPSYN (5913) | NM\_005055.5 | Forward: TCTACTGCGGCCTGGCCGGCGAGTCCATAG |
| Reverse: CTATGGACTCGCCGGCCAGGCCGCAGTAGA |
| GST-RAPSYN Y59F mutant primers | Forward: GGAGATGGGCCGCTTTAAGGAGATGCTGAAGTT |
| Reverse: AACTTCAGCATCTCCTTAAAGCGGCCCATCTCC |
| GST-RAPSYN Y152F mutant primers | Forward: GAGAAGGCCCTGCGCTTTGCCCACAACAATGAT |
| Reverse: ATCATTGTTGTGGGCAAAGCGCAGGGCCTTCTC |
| GST-RAPSYN Y336F mutant primers | Forward: TGAGCGAGAGCATTTTTCGCAGCAAAGGGCTC |
| Reverse: GCAGCCCTTTGCTGCGAAAAATGCTCTCGCTCA |
| His-BCR-ABL K257R mutant primers |  |  | Forward: CCCCCGCTTCCTGAGGGACAACCTGATCGAC |
| Reverse: GTCGATCAGGTTGTCCCTCAGGAAGCGGGGG |
| His-BCR-ABL K500R mutant primers | Forward: GGCTTGGAGATGAGAAGATGGGTCCTGTCGGG |
| Reverse: CCCGACAGGACCCATCTTCTCATCTCCAAGCC |
| His-BCR-ABL K739R mutant primers | Forward: CTGCTTCTCTGCACCAGGCTCAAGAAGCAGAGC |
| Reverse: GCTCTGCTTCTTGAGCCTGGTGCAGAGAAGCG |
| His-BCR-ABL K802R mutant primers | Forward: GACATCCAGAGAGAGAGGAGGGCGAACAAGGC |
| Reverse: GCCCTTGTTCGCCCTCCTCTCTCTCTGGATGTC |
| His-BCR-ABL K1025R mutant primers | Forward: GTCAACAGTCTGGAGAGACACTCCTGGTACCAT |
| Reverse: ATGGTACCAGGAGTGTCTCTCCAGACTGTTGAC |
| His-BCR-ABL K1135R mutant primers | Forward: TCCCCCAACTACGACAGGTGGGAGATGGAACC |
| Reverse: GCGTTCCATCTCCCACCTGTCGTAGTTGGGGGA |
| His-BCR-ABL K1590R mutant primers | Forward: CCCACCTGTGGAAGAGGTCCAGCACGCTGAC |
| Reverse: GTCAGCGTGCTGGACCTCTTCCACAGGTGGG |
| His-BCR-ABL K1990R mutant primers | Forward: CGAGAGGCCATCAACAGACTGGAGAATAATCTC |
| Reverse: GAGATTATTCTCCAGTCTGTTGATGGCCTCTCG |