Supplementary Figure 1

Linker and Primer Sequences for LM-PCR

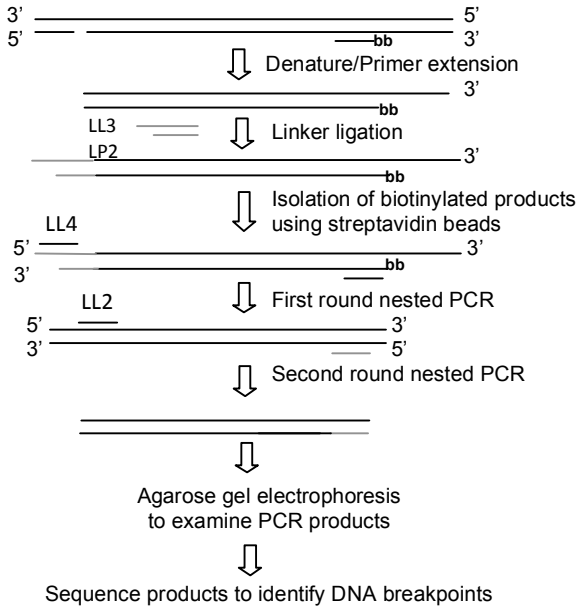
LL3	5’-CGAGTTCAGTCCGTAGACCATGGAGATCTGAATTC-3’
LP2	5’-GAATTCAGATCTCC-3’
LL4	5’-CGAGTTCAGTCCGTAGAC-3’
LL2	5’-GTAGACCATGGAGATCTGAAATTC-3’
RET-7	5’- BBCAGCATCTTCACGGCCACCGTGG-3’ (B, biotin)
RET-R1b	5’- TATCCTGCTCTGCCTTTCAGATGG-3’
RET-R1	5’-AGTTCTTCCGAGATTCC-3’
FRA3B-20	5’- BBCCTATCTGACGACTTCAC-3’ (B, biotin)
FRA3B-9	5’- GAAAGCATAAAGTGTGGC-3’
FRA3B-23	5’- TAACTGCTTATTTTTCCGATGT-3’
12p12.3-1	5’- BBTTTTCTTGACTAGTCTAACCAGAT-3’ (B, biotin)
12p12.3-2	5’- TTTCACTTGTATTGATCTCCTTCAT-3’
12.12.3-3	5’- TTTCCACTGTTTGCCGCATTAT-3’
G6PDF3	5’-BBAGTAAAAACACAAGCCCCGCCCC-3’ (B, biotin)
G6PDF	5’-TAGGGCCGCATCCCGCTCCGGAGAGAAGTCT-3’
G6PDF2	5’-GGCCACTTTGCAGGGCGTCA-3’

PCR primers for Detection of *RET/PTC* Rearrangements

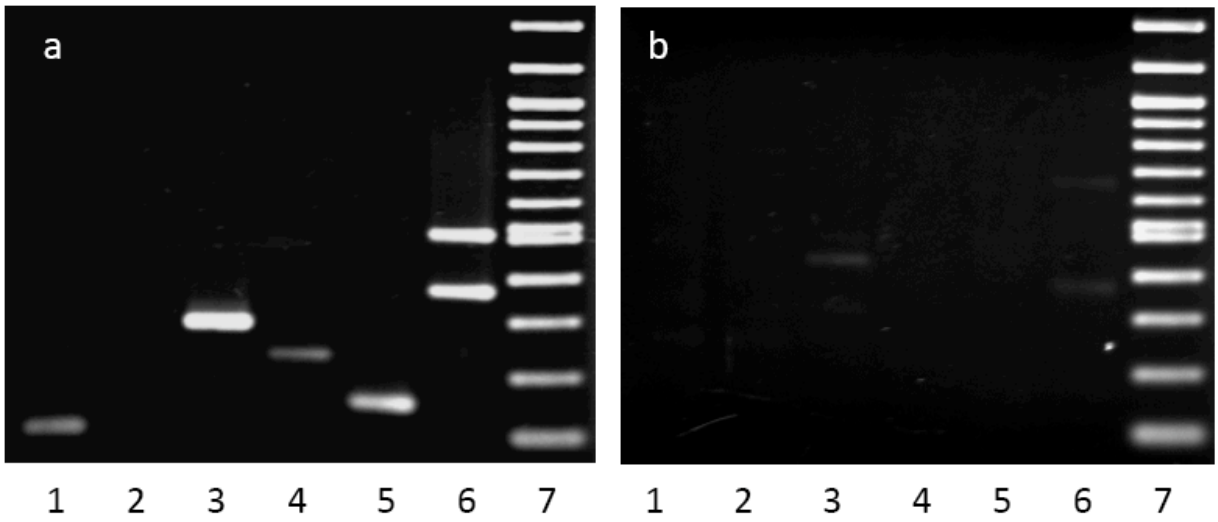
RET/PTC1 forward	5'-CAAGAGAACAAGGTGCTGAAG-3'
RET/PTC3 forward	5'-CGGTATTGTAGCTGTCCCTTTC-3'
common reverse	5'-GCAGGTCTCGAAGCTCACTC-3'

^{32}P-labeled oligonucleotide probes

RET/PTC1	5'-CGTTACCATCGAGGATCCAAA-3'
RET/PTC3	5'-GAACAGTCAGGAGGTCCAA-3'



Supplementary Figure 2. DNA breaksite mapping by LM-PCR. Genomic DNA was isolated from HTori-3 cells with or without APH treatment, and was denatured and then annealed to a biotinylated primer specific for the region of interest. Primer extension was carried out with DNA Sequenase, and the reaction terminates at a DNA break. DNA breaks were isolated through ligation of the LL3/LP2 linker, and recovered by streptavidin beads. Amplification of these DNA breaks was achieved by nested PCR of the extension-ligation products. The final PCR products were resolved by agarose gel electrophoresis. Each band observed on the gel corresponds to a break found within the region of interest. The exact breakpoint sites were determined by DNA sequencing of the PCR products, and by identifying the nucleotide adjacent to the LL3/LP2 linker sequence.



Supplementary Figure 3. LM-PCR detection of breaks formed in HTori-3 cells after treatment with APH. LM-PCR detection of DNA breaks formed in HTori-3 cells at intron 11 of *RET* (**a**) and exon 1 of *G6PD* (**b**) after treatment with APH. Last lane of each gel is a 100 bp molecular weight ladder.