

**Table S2.** List of the 32 cancer-related genes in the multiple-gene NGS panel.

Gene	Reference sequence	Sequencing area
<i>AR</i>	NM_000044.3	Entire coding region
<i>ATM</i> <sup>*,#</sup>	NM_000051.3	Entire coding region
<i>ATR</i> <sup>*,#</sup>	NM_001184.3	Entire coding region
<i>BARD1</i> <sup>*,#</sup>	NM_000465.3	Entire coding region
<i>BRCA1</i> <sup>*,#</sup>	NM_007294.3	Entire coding region
<i>BRCA2</i> <sup>*,#</sup>	NM_000059.3	Entire coding region
<i>BRIP1</i> <sup>*,#</sup>	NM_032043.2	Entire coding region
<i>CDH1</i> <sup>*</sup>	NM_004360.3	Entire coding region
<i>CDK12</i> <sup>*,#</sup>	NM_016507.3	Entire coding region
<i>CHEK1</i> <sup>*,#</sup>	NM_001274.5	Entire coding region
<i>CHEK2</i> <sup>*,#</sup>	NM_007194.3	Entire coding region
<i>ESR1</i>	NM_001122740.1	Entire coding region
<i>FANCA</i> <sup>*,#</sup>	NM_000135.2	Entire coding region
<i>FANCL</i> <sup>*,#</sup>	NM_018062.3	Entire coding region
<i>HDAC2</i>	NM_001527.3	Entire coding region
<i>HOXB13</i>	NM_006361.5	Entire coding region
<i>MRE11A</i> <sup>*,#</sup>	NM_005591.3	Entire coding region
<i>NBN</i> <sup>*,#</sup>	NM_002485.4	Entire coding region
<i>PALB2</i> <sup>*,#</sup>	NM_024675.3	Entire coding region
<i>PPP2R2A</i> <sup>*</sup>	NM_002717.3	Entire coding region
<i>PTEN</i> <sup>*</sup>	NM_000314.4	Entire coding region
<i>RAD51B</i> <sup>#</sup>	NM_133509.3	Entire coding region
<i>RAD51C</i> <sup>*,#</sup>	NM_058216.2	Entire coding region
<i>RAD51D</i> <sup>*,#</sup>	NM_133629.2	Entire coding region
<i>RAD54L</i> <sup>*,#</sup>	NM_001142548.1	Entire coding region
<i>STK11</i> <sup>*</sup>	NM_000455.4	Entire coding region
<i>TP53</i> <sup>*</sup>	NM_000546.5	Entire coding region
<i>BRAF</i> <sup>*</sup>	NM_004333.4	Hot-spot (exon 11/12/15/18)
<i>ERBB2</i>	NM_004448.3	Hot-spot (exon 1/3/8/9/11/16-21/23/25/27)
<i>KRAS</i> <sup>*</sup>	NM_033360.3	Hot-spot (exon 2/3/4)
<i>NRAS</i> <sup>*</sup>	NM_002524.4	Hot-spot (exon 2/3/4)
<i>PIK3CA</i>	NM_006218.2	Hot-spot (exon 2/5/6/8/10/14/21)

\* cancer-susceptibility gene

# HRR ( homologous recombination repair )-related gene