

**Title:** Supplementary Data 1.

**Description:** Deletion Frequency Optimized CNVRs (provided in Excel format)

**Title:** Supplementary Data 2.

**Description:** Duplication Frequency Optimized CNVRs (provided in Excel format)

**Title:** Supplementary Data 3.

**Description:** Homozygous Deletion Frequency Optimized CNVRs (provided in Excel format)

**Title:** Supplementary Data 4.

**Description:** Poor Linkage Disequilibrium Between Rare CNV and Common SNP Genotypes (provided in Excel format)

**Title:** Supplementary Data 5.

**Description:** Extended results showing CNVRs associated with diseases reaching GWS significance ( $5 \times 10^{-8}$ ). (provided in Excel format)

**Title:** Supplementary Data 6.

**Description:** Extended results showing hdCNVRs associated with diseases reaching experimentally defined significance based on repeated simulations ( $5 \times 10^{-4}$ ). (provided in Excel format)

**Title:** Supplementary Data 7.

**Description:** Publications supporting somatic impact of cancer-associated CNVR mapped genes in multiple human cancers (provided in Excel format)