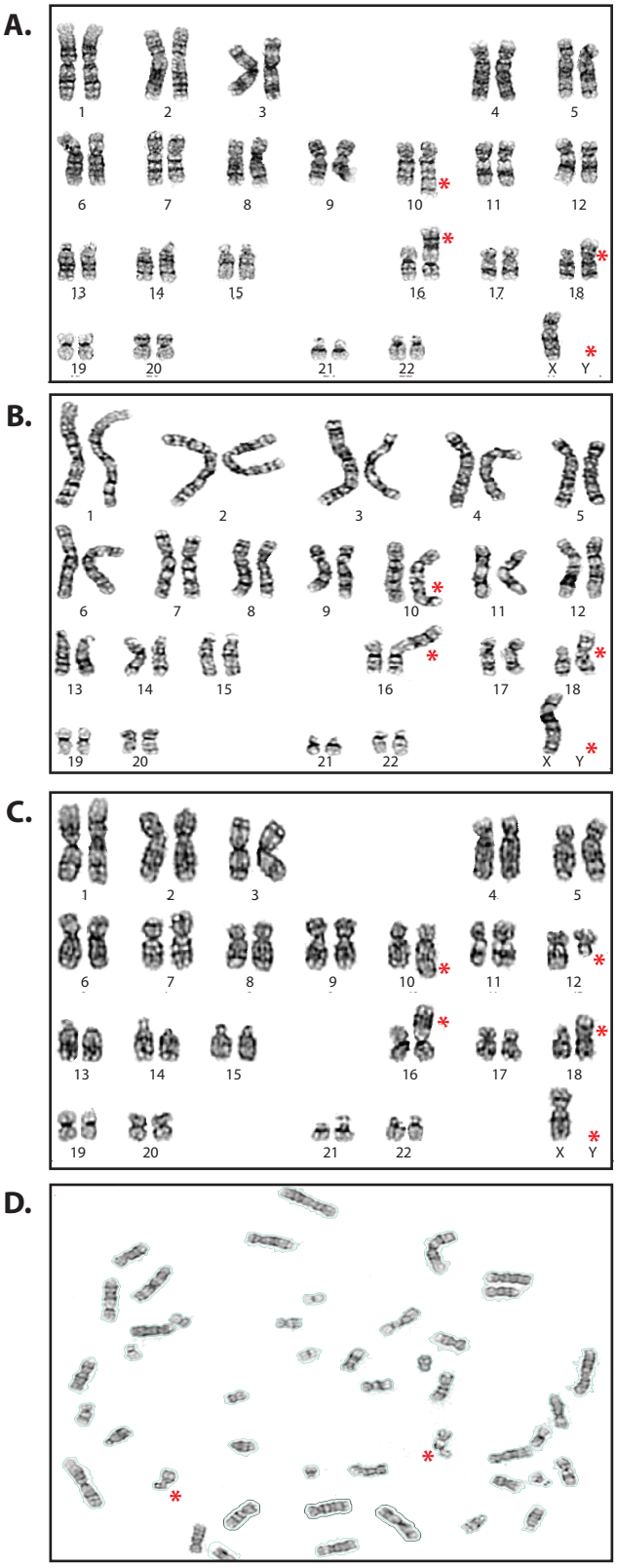
Supplementary Figure 1. G-band karyotyping demonstrates that LIGIV-null cells are genetically unstable. Gross chromosomal rearrangements are indicated by red asterisks. The parental ($LIGIV^{+/+}$) cell line has 4 very reproducible abnormalities including a duplication on chromosome 10, translocations on chromosomes 16 and 18 and the variable loss of the Y chromosome (panel A). Karyotypes of the heterozygous ($LIGIV^{+/-}$) #130-26 cell line were indistinguishable from the parental cell line (panel B). Karyotypes of the null ($LIGIV^{-/-}$) #312 cell line contained the parental GCRs as well as additional ones (panel C) and showed frequent chromosome and chromatid breaks (panel D).

Supplementary Figure 2. Complementation of LIGIV-null cells with HA-tagged and untagged versions of a LIGIV human cDNA. Nuclear extracts from the parental cell line (WT), a LIGIV heterozygous clone ($LIGIV^{+/-}$), the LIGIV-null clone ($LIGIV^{-/-}$) and two LIGIV-null clones stably complemented with either an untagged (#14 and #57) or a HA-tagged (#17 and #52) version of a human LIGIV wild-type cDNA were subjected to an immunoblot analysis using either a LIGIV-specific antibody (first 5 lanes), an HA-antibody (last 2 lanes) or, as a loading control, an actin antibody (all seven lanes).

Supplementary Table 1. Summary of GCR frequency in LIGIV clones

Designation	Genotype	Metaphases	GCRs	Frequency (%)
wtHCT116	LIGIV$^{+/+}$	143	14	9.8
#69	LIGIV$^{+/-}$	20	0	0.0
#130-26	LIGIV$^{+/-}$	20	2	10.0
#163-7	LIGIV$^{+/-}$	20	4	20.0
#312	LIGIV$^{-/-}$	40	17	42.5

Supplementary Figure 1. Representative examples of LIGIV-null metaphases containing GCRs



Supplementary Figure 2. Complementation of LIGIV-null cells with HA-tagged and untagged versions of a LIGIV human cDNA