Supplementary information, Table S1:PCR Primers

Primers for quantifying the frequencies of HR, SSA and NHEJ	
Normalizing forward primer (Norm-F)	ATCATGGCCGACAAGCAGAAGAACG
Normalizing reverse primer (Norm-R)	CGGCGGCGGTCACGAACTCC
HR and SSA repair forward primer (HR and SSA-Rep-F)	TGACCACCCTGACCTACG
Repair reverse primer (Rep-R):	CACCTTGATGCCGTTCTTCTGC
NHEJ repair forward primer (NHEJ-Rep-F-1)	TCGGAGCAAGCTTGATTTAGGTGA
Primers for the overexpression constructs	
rad51-EcoRI-For	GCCAGAATTCAATATGGCC ATGAGGAACGCATC
rad51-XhoI-Rev	CGGTCTCGAGTCAGTCTTTAGCATCTCCCA
rad52-EcoRI-For	GCCAGAATTCAATATGGCC ATGGATTATAGCAGCGGGA
rad52-XhoI-Rev	CGGTCTCGAGTCACGTGTCCAATCTTCGTT
lig4-ClaI-For	GCCAATCGATAATATGGCCATGGAAAGTGTC TCAAAAAGT
lig4-XhoI-Rev	CGGTCTCGAGTTAAATCAGGTAGTCAATCT
HA-HuRad51-BamH1-For	CGCGGATCCACCATGGAGTACCCATACGACG TACCAGATTACGCTCATGCAATGCAGATGCA GCTTGAAGCA
HA-HuRad51-Xba1-Rev	CGCTCTAGATCAGTCTTTGGCATCTCCCACTC CA
HA-HuRPA2-For-BamH1	CGCGGATCCACCATGGAGTACCCATACGACG TACCAGATTACGCTCATTGGAACAGTGGATT CGAAAG
HA-HuRPA2-Rev-EcoR1	CGCGAATTCTTATTCTGCATCTGTGGAT
Primers for the *rad51* promoter analysis	
rad51pro-XhoI-For	CGCCTCGAGTGTGAGAATGTGAGGTATATAA AT
rad51pro-BamHI-Rev	CATGGATCCTGCTAGAGCTGAACTTTCCCGC GT
rad51p-ΔRE1-For	TTCATCTTACTCCGGTGACTGGGCTAGCCAAT CCTGGAGCACCT
rad51p-ΔRE1-Rev	CTAGCCCAGTCACCGGAGTAAGATGAAAGA GGAGGCATTGAAGATG
rad51p-ΔRE2-For	AGCAATCAGGTACGTGACGGGGTGAGAACG CGGCGAAATCCGAA
rad51p-ΔRE2-Rev	CTCACCCCGTCACGTACCTGATTGCTGGAGC

	TGCTCTTTCCCGGACT
Primers for qRT-PCR in zebrafish	
ZF rad51 qPCR For(accession No: BC062849)	AGCGCAGAGCCGAAATCATCC
ZF rad51 qPCR Rev	TTCAGCCACAGCCAGCAGTCTCT
ZF rad52 qPCR For(accession No: BC098627)	CAGCGGGAGGCAAGAGGAGAG
ZF rad52 qPCR Rev	TTGGCCAGGCTTATAACTTTGTGA
ZF lig4 qPCR For(accession No: NM_001103123)	GCTGCGCAAGTTCCGTTCATT
ZF lig4 qPCR Rev	GCCATTCGCTCCCTCTCAAAAG
ZF p21 qPCR For	GAAGCGCAAACAGACCAACAT
ZF p21 qPCR Rev	GCAGCTCAATTACGATAAAGA
ZF Mdm2 qPCR For	CTCGCAGTGAGGGCAGTGAAG
ZF Mdm2 qPCR Rev	TCTAGGCACGTAGCGGGAAGG
ZF-18S rRNA-480F	CGCCACTTGTCCCTCTAAGAA
ZF-18S rRNA-851R	GTAGTTCCGACCGTAAACGAT
ZF RecQ4 qPCR For(accession No: CR927913)	GGAGGCGGCCATCATGAGAATACT
ZF RecQ4 qPCR Rev	GAACGCCCAGCCGGTCCCTTAG
ZF WRN qPCR For(accession No: EE302738)	TTCCAGACCCACGGCGCAACAAAC
ZF WRN qPCR Rev	CTCCTCCGCCAGCTCCGCCTTCA
ZF 53BP1 qPCR For(accession No: AI793650)	GGGCGACGTTACCAGGGAGAC
ZF 53BP1 qPCR Rev	CTTTTGGGCAATTTGGAGACAGT
ZF BRCA2 qPCR For(accession No: NM_001110394)	ATGAAGCTGCAGGAGATGGTTTAG
ZF BRCA2 qPCR Rev	TGATGAATGGGCTTTGATGACTCT
ZF Ku70 qPCR For(accession No: NM_199904)	TTATGGGACTGAGCAGAGCAAGAA
ZF Ku70 qPCR Rev	ATCGCAAAAGAACAGGGAAACATC
ZF Ku80 qPCR For (accession No: NM_001017360)	TGTGCCGTTTTCAAAGGTAGAC
ZF Ku80 qPCR Rev	TGGGGAAAGTGAACTGACGGAGAT
ZF MRE11 qPCR For (accession No: NM_001001407)	GGCAACCATGATGACCCAACTG
ZF MRE11 qPCR Rev	TACGGACCGGAGCGATTTTACACT
ZF DNA-PK qPCR For (accession No: XM_001919553.2)	TTAGACTCTTCATCGCCAAACTTA
ZF DNA-PK qPCR Rev	AAACCGCTCGTATATCAAATCGTA
ZF XRCC4 qPCR For (accession No: NM_200786)	TTCAGGCTGGGCGTGGTGGAT
ZF XRCC4 qPCR Rev	CAGGGCTCGGAGTTTGGCTTTCT
ZF RPA2 qPCR For (accession No: NM_199811)	GGAGACAAAAAGGGGAGGACACG
ZF RPA2 qPCR Rev	AACGCTGAACGCCACCAAAGAC
Primers for qRT-PCR in human cell lines	

Hu *Rad51* H1 qPCR 665 For	ACAGTGCCACCGCCCTTTACA
Hu *Rad51* H1 qPCR 905 Rev	GGTTTCCCCTCTTCCTTTCCTCA
Hu *Rad52*qPCR 54 For	TGGCGGCGGCTCAGTGTTATG
Hu *Rad52*qPCR 253 Rev	ATTCTGCTGCGTGATGGAGTGTGC
Hu *Lig4* H1 qPCR 1806 For	TAGGGGGAAGGCATCTGGTAAG
Hu *Lig4* H1 qPCR 2069 Rev	GTGTCTGGGCCTGGATTTTGTA
Hu *d133p53*qPCR i4 For	TGGGTTGCAGGAGGTGCTTAC
Hu *d133p53*qPCR i4 Rev	CCACTCGGATAAGATGCTGAGG
Hu Full *p53*qPCR For	TGGAGGAGCCGCAGTCAGAT
Hu Full *p53*qPCR Rev	GCAGGGGCCGCCGGTGTAGGAG
Hu *β-Actin*qPCR For	TGGTGGGCATGGGTCAGAAGGAT
Hu *β-Actin*qPCR Rev	CCAGAGGCGTACAGGGATAGCAC
Primers for qPCR in a ChIP assay	
ChIP-Δ*113p53*-RE1-For	GACTTCAGAGATGGTTGTTG
ChIP-Δ*113p53*-RE1-Rev	GTTTGGTTGTGGGTGGTA
ChIP-*p53*-RE3-For	GCAGAATCAGTGGAGGTT
ChIP-*p53*-RE3-Rev	CCAAATGTTCGCCAGGAT
ChIP-*p53*-exon10-For	TGTGATCCATTAGTCCTGTT
ChIP-*p53*-exon10-Rev	ACAACCGAATACTGGCATT
rad51-ChIP-RE1-For(-3418)	GTTCATCTTCAATGCCTCCTCT
rad51-ChIP-RE1-Rev(-3579)	CTCATACTTCAGCCTCCACATC
rad51-ChIP-RE2-For(-1241)	AGGCTCAAGATGCGGAGAG
rad51-ChIP-RE2-Rev(-1118)	CCGTCACGAAACTTGTTCACT
rad51-ChIP-exon-For(6911)	TTCCACCACAGTCCACAGA
rad51-ChIP-exon-Rev(7009)	CCAATGCTGAACCTCCAATCT
rad52-ChIP-RE2-For(-4986)	AGCTACACTGTGTTCTGAG
rad52-ChIP-RE2-Rev(-4807)	AGGAACCATTAGTTCACCAT
rad52-ChIP-RE1-For(-2659)	TCAAGGACATTCGCCGAGAT
rad52-ChIP-RE1-Rev(-2419)	ATGGTGGTGGCAGCATCAT
rad52-ChIP-exon-For(3375)	TTATGTGCTGCTGCCAAT
rad52-ChIP-exon-Rev(3562)	TCCATCTCCTGTCTGAACT
lig4-ChIP-RE2-For(-4040)	ACCAACCAAGATGAGTAAGC
lig4 -ChIP-RE2-Rev(-3857)	ATATCAGGACTCCACCACAT
lig4 -ChIP-RE1-For(-2062)	GAAACATAGTTCAACAGTAGGC
lig4 -ChIP-RE1-Rev(-1962)	CCTACTTTCCTTGTTATACAGC
lig4 -ChIP-exon-For(937)	AAGTGCCATTCCATAAGGT
lig4 -ChIP-exon-Rev(1080)	GTCTGCTGAACTGATAACAA