

Supplementary Data

Supplementary Figures

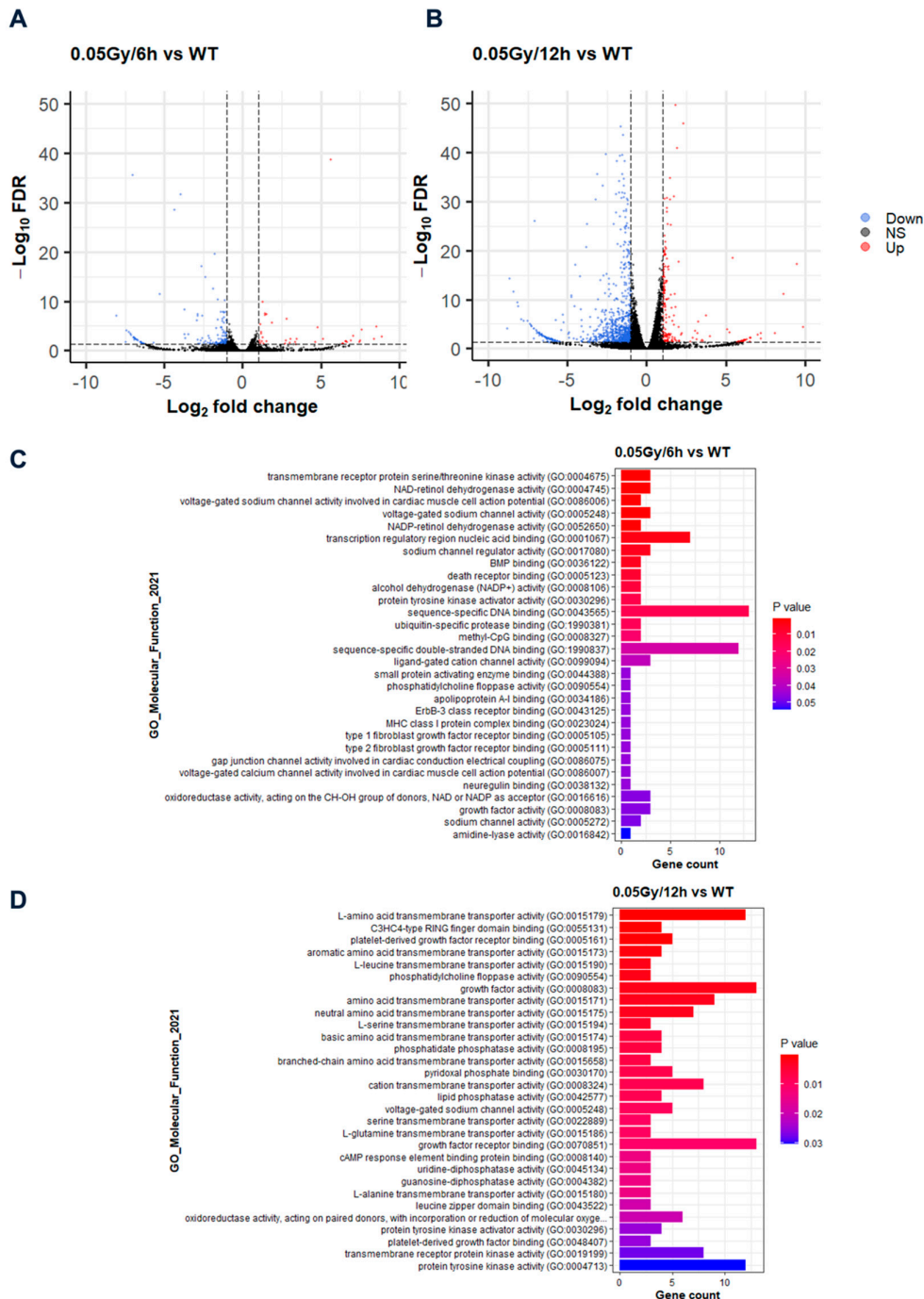


Figure S1. LDIR potentially contributes to changes in molecular functions and gene regulation in human cells. **(A-B)** Volcano plot representation of differential expression analysis of genes in 0.05 Gy irradiation for 6 h **(A)** and 12 h **(B)** versus wild type (WT). The

black dots denote non-significant, the blue dots denote downregulated genes ($\text{FDR} < 0.05$, $\log_2 \text{FC} < -1$), and the red dots denote upregulated genes ($\text{FDR} < 0.05$, $\log_2 \text{FC} > 1$). (C-D) Molecular function of Gene Ontology (GO) enrichment analysis with differentially expressed genes (DEGs) in 0.05 Gy irradiation for 6 h (C) and 12 h (D).

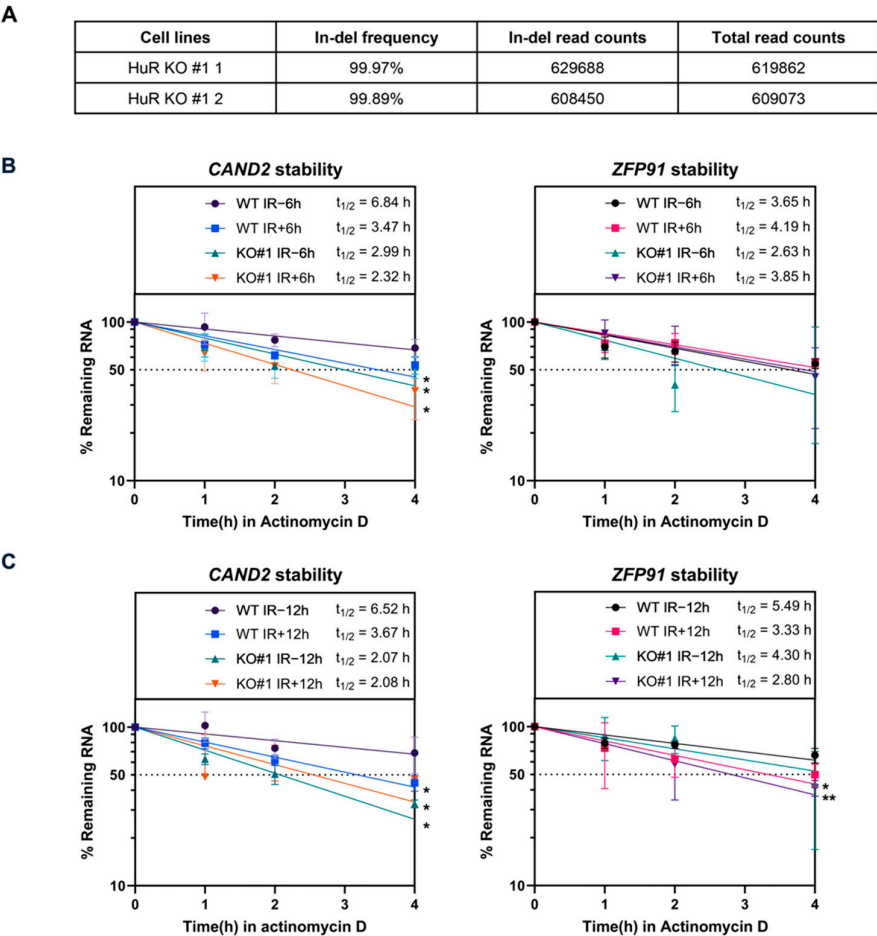


Figure S2. Low-dose ionizing radiation (LDIR) affects the stability of mRNAs targeted by human antigen R (HuR). (A) Indel frequencies in HuR were determined by deep sequencing using the HEK293 CRISPR/Cas9 system. (B, C) Stability of *CAND2* and *ZFP91* mRNAs after 0.05 Gy irradiation for 6 h (B) and 12 h (C) in HuR $+/+$ and $-/-$ cells. Data represent three independent experiments. *: $p < 0.05$; **: $p < 0.01$ from Student's t -test.

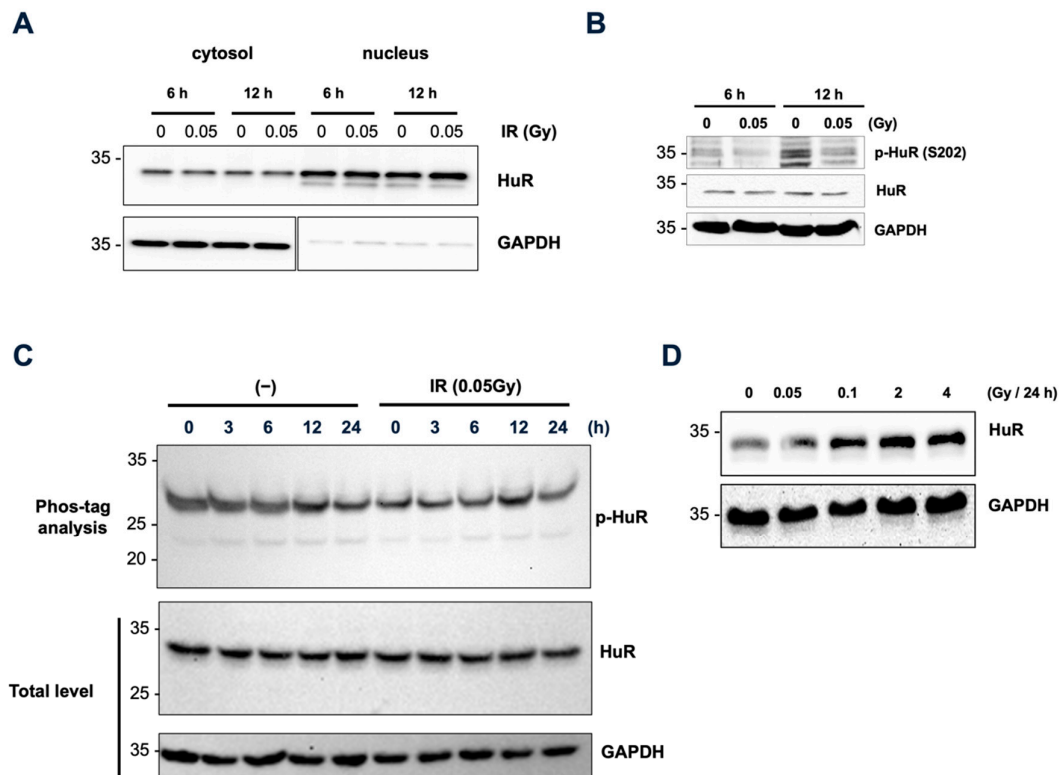


Figure S3. Molecular mechanisms of how low dose ionizing radiation (LDIR) alters the regulation of human antigen R (HuR)-mediated gene expression regulation. **(A)** Western blot analysis of the localization of HuR in cytosol and nucleus upon 0.05 Gy irradiation for 6 or 12 h. **(B)** Western blot analysis of the level of phospho HuR-S202 upon 0.05 Gy irradiation for 6 or 12 h. **(C)** Phos-tag electrophoresis demonstrating HuR phosphorylation in HEK293 cells upon 0.05 Gy irradiation for the indicated time. **(D)** Stability of HuR in HEK293 cells was detected by using western blotting after exposure to radiation for 24 h in HEK293 cells. Original blot images are presented in supplementary figure S4.