

Table S1 Primers used in the qRT-PCR for indicated genes

Gene name	Sequence
<i>CRNDE</i>	5'-ATATTCAGCCGTTGGTCTTTGA-3' (forward)
	5'-TCTGCGTGACAACCTGAGGATTT-3' (reverse)
<i>ACTB</i>	5'-GATGCGTTGTTACAGGAAGTCC-3' (forward)
	5'-GGCACGAAGGCTCATCATTCA-3' (reverse)
<i>IFN-γ</i>	5'-GAACTGTCGCCAGCAGCTAAA-3' (forward)
	5'-TGCAGGCAGGACAACCATTA-3' (reverse)
<i>TNF-α</i>	5'-TTCTGGCTCAAAAAGAGAATTG-3' (forward)
	5'-TGGTGGTCTTGTTGCTTAAGG-3' (reverse)

ACTB, **actin beta**; *CRNDE*, colorectal neoplasia differentially expressed; *IFN- γ* , interferon- γ ; qRT-PCR, quantitative reverse transcription-polymerase chain reaction; *TNF- α* , tumor necrosis factor- α .

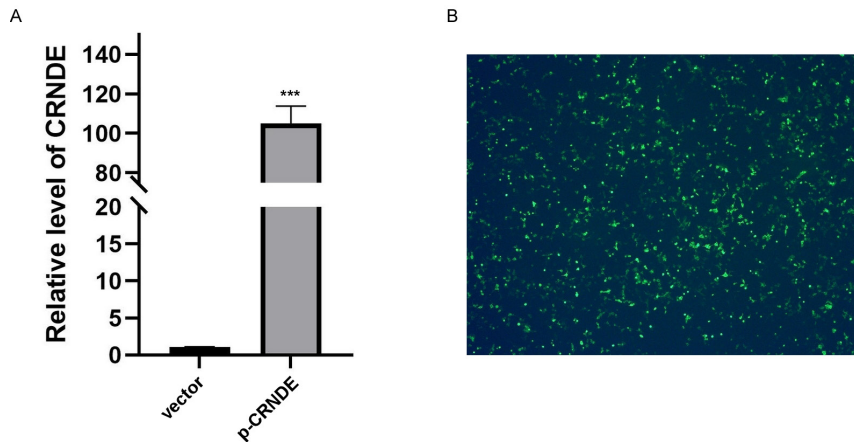


Figure S1 Plasmid overexpression of CRNDE. (A) The CRNDE levels were detected by qPCR in HEK293T cells stably overexpressing CRNDE plasmids or control plasmids. (B) Representative pictures of EGFP-tagged CRNDE vector were detected 24 hours after transfection of HEK293T cells. ***, $P < 0.001$. CRNDE, colorectal neoplasia differentially expressed; qPCR, quantitative polymerase chain reaction.

allele	peptide	score
HLA-A*02:01	FIMELLYWL	28
HLA-A*02:01	VLGIPVYRL	27
HLA-A*02:01	NIQPLVFEI	25
HLA-A*02:01	VLEWFKYVL	22
HLA-A*02:01	MLAEIHPKA	21
HLA-A*02:01	SLQFIMELL	21

Figure S2 The binding predictions for CRNDE 84aa to HLA-A2 using the SYFPEITHI algorithm. CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, **CRNDE encodes an 84-amino acid peptide**.

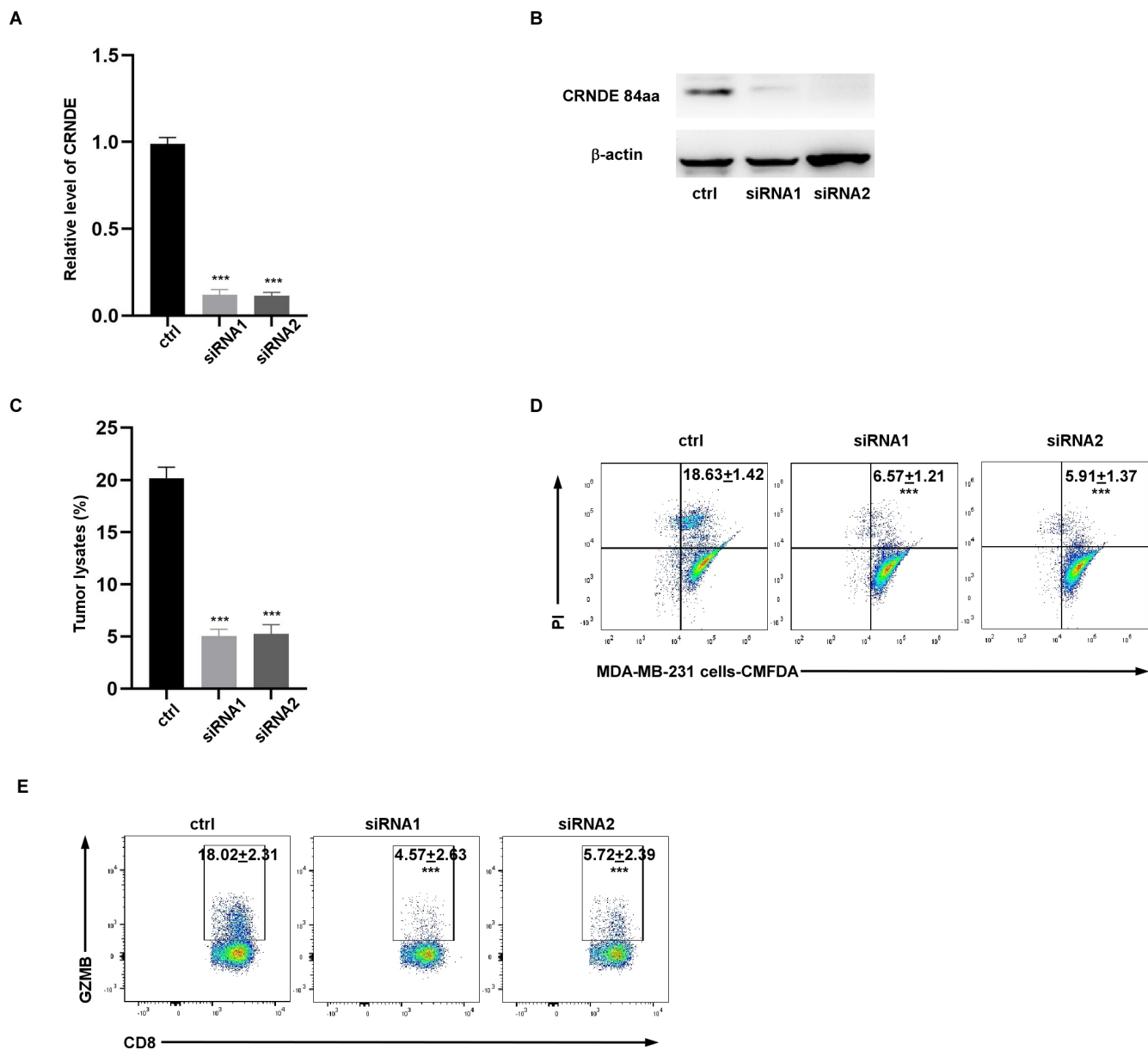


Figure S3 XXXXXXXXXXXX. (A) KD efficiency of CRNDE by siRNA in MDA-MB-231. (B) The protein levels of CRNDE 84aa were detected by Western blotting after transfection with siRNA targeting CRNDE 84aa. (C) CRNDE 84aa primed T cells were cocultured with MDA-MB-231 cells with CRNDE KD for 18 hours, and their cytotoxicity against MDA-MB-231 cells was assessed via a LDH assay (mean \pm SD, n=3). (D) T cells were cocultured with CellTrace CMFDA-labeled MDA-MB-231 cells with CRNDE KD for 18 hours. Tumor cell death was examined by PI uptake via flow cytometry. The percentages of dead tumor cells are shown (mean \pm SD, n=3). (E) CD8⁺ T cells were primed by autologous DCs loaded with antigens. Representative flow cytometry plots and quantification of the secretion of GZMB in T cells. ***, P<0.001. CMFDA, 5-chloromethylfluorescein diacetate; CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, CRNDE encodes an 84-amino acid peptide; Ctrl, controls; DC, dendritic cell; KD, knockdown; GZMB, granzyme B; LDH, lactate dehydrogenase; PI, propidium iodide; SD, standard deviation; siRNA, small interfering RNA.

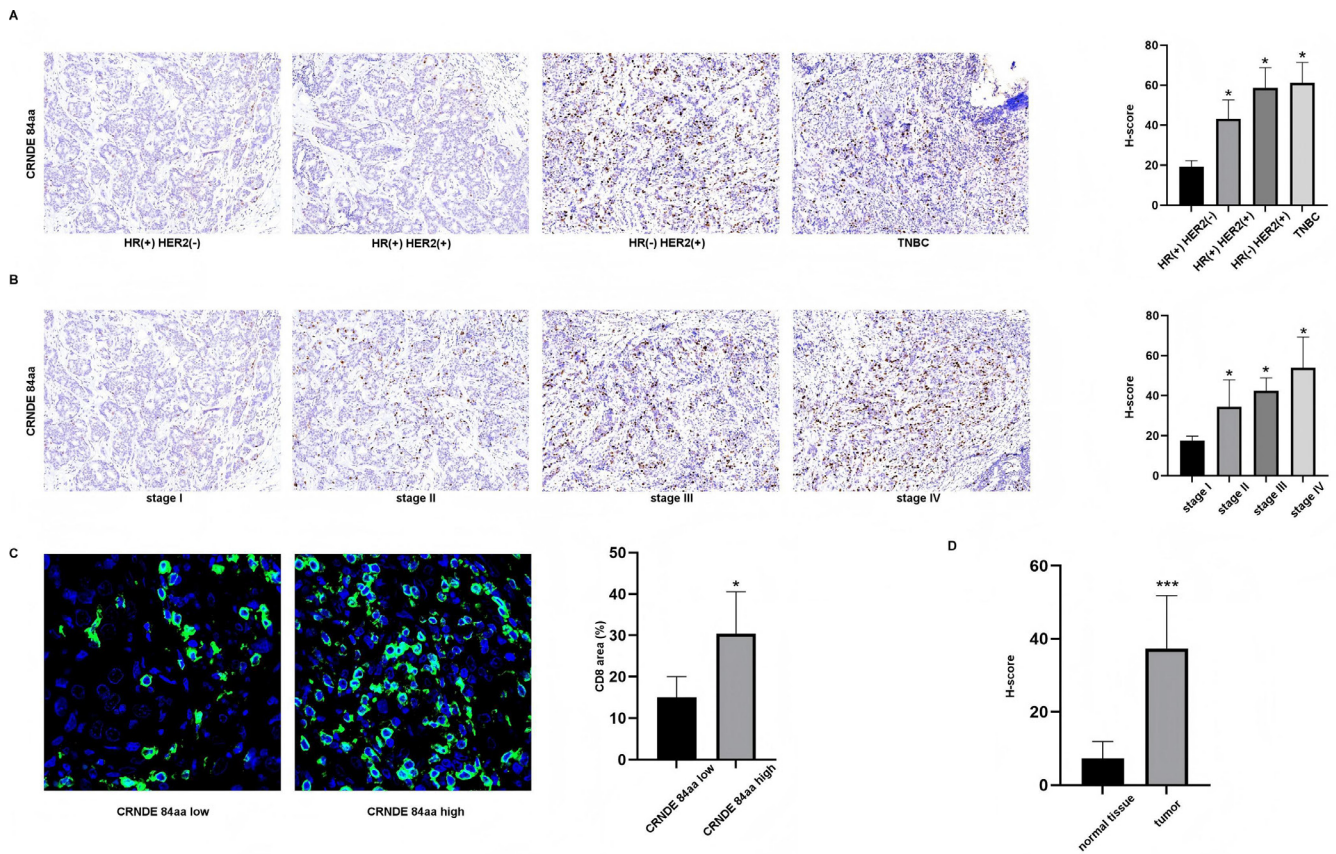


Figure S4 XXXXXXXXXXXXXXX. (A) Representative IHC staining of CRNDE 84aa in different molecular subtypes of breast cancer. (B) Expression of CRNDE 84aa in different stages of breast cancer detected by IHC. (C) Immunofluorescence analysis of CD8⁺ T cell infiltration in breast cancer tissues with different CRNDE 84aa expression levels. (D) Immunohistochemical analysis of CRNDE 84aa expression in normal and cancerous tissues. *, P<0.05; ***, P<0.001. CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, CRNDE encodes an 84-amino acid peptide; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; IHC, immunohistochemistry.

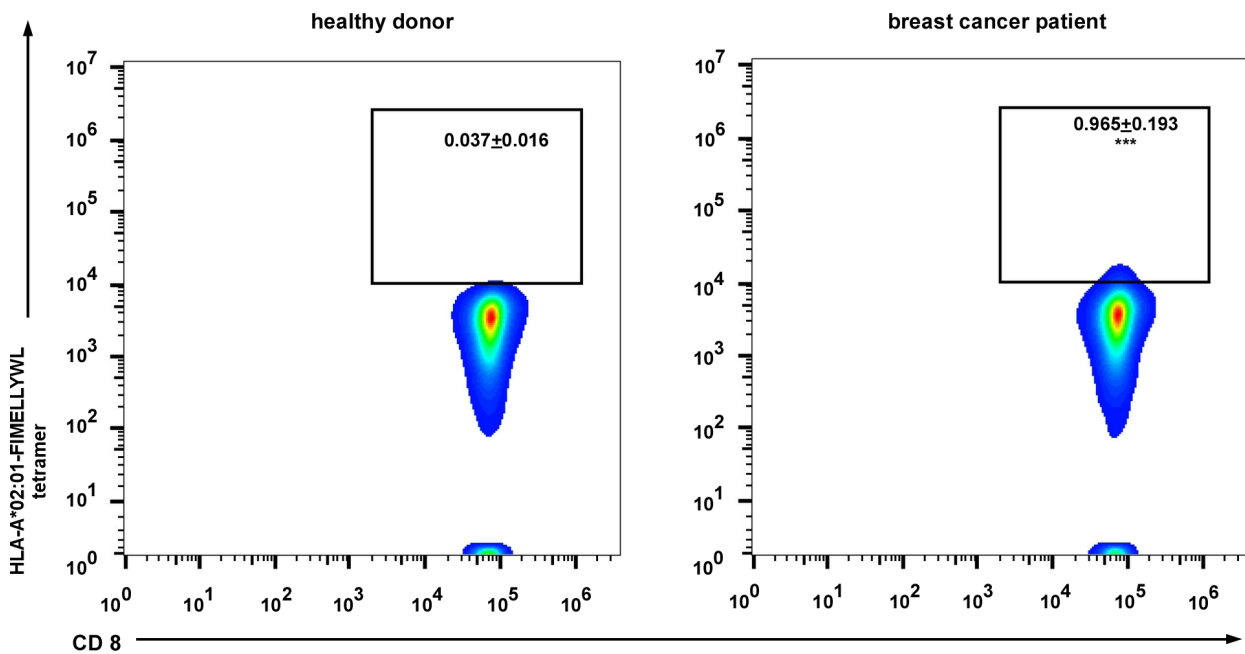


Figure S5 Representative flow cytometry plots and quantitation of FIMELLYWL-tetramer + CTLs in the peripheral blood of healthy donor and breast cancer patients with CRNDE 84aa expression (mean \pm SD; healthy donor: n=3, patient: n=3). CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, **CRNDE encodes an 84-amino acid peptide**; CTLs, cytotoxic T lymphocytes; SD, standard deviation.

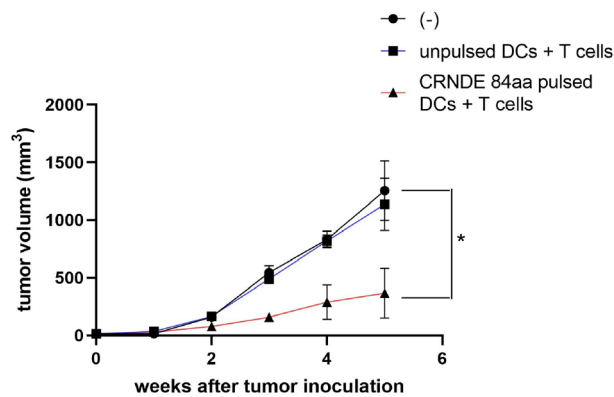


Figure S6 Tumor volumes were monitored weekly for 5 consecutive weeks following infusion of untreated, unpulsed, or CRNDE 84aa-pulsed DCs and T cells. *, $P < 0.05$. CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, **CRNDE encodes an 84-amino acid peptide**; DC, dendritic cell.

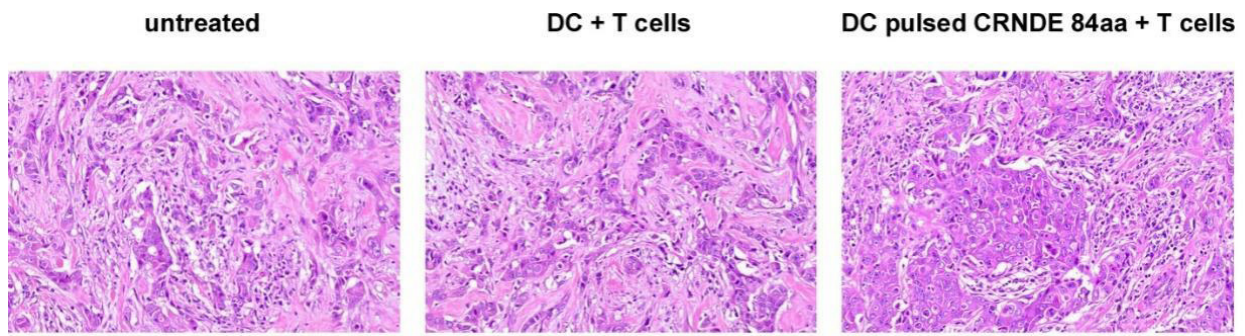


Figure S7 Representative HE-stained tumor sections from PDX mice in each group. CRNDE, colorectal neoplasia differentially expressed; CRNDE 84aa, **CRNDE encodes an 84-amino acid peptide**; DC, dendritic cell; HE, hematoxylin and eosin; PDX, patient-derived xenograft;