**Supplementary Data**

**Supplementary Methods and Materials**

**Immunohistochemistry**

For human CD8 staining, paraffin-embedded sections (5 μm) were first stained with mouse anti-human CD8 monoclonal antibody (dilution 1:100; Nichirei, Tokyo, Japan; clone C8/144B). For mouse immunohistochemistry, peritoneal tumor cryosections (6 μm) were stained with rat anti-mouse CD4 (dilution 1:100; clone H129.19; BD Pharmingen), rat anti-mouse CD8 (dilution 1:100; clone KT, Beckman Coulter), goat anti-mouse PD-L1 (dilution 5μg/ml; clone B7H1, R&D Systems), anti-NF-κB p65 (dilution 1:1000; #3034,Cell Signaling), or anti-mouse Gr-1 (dilution 1:50; Ly-6G and Ly-6C, BD Pharmingen). All signals were visualized by the Avidin Biotin Complex method. The numbers of CD4+, CD8+, and Gr-1+ cells at the tumor site were counted in a microscopic field at 200×. Four areas with the most abundant infiltration were selected, and the average number was calculated. PD-L1 and NF-κB p65 staining scores were calculated based on the staining degree (−, 0; +, 1; ++, 2) and proportion (<10%, 1; 10%–25%, 2; 25%–50%, 3; >50%, 4). Score = proportion × (degree−) + proportion × (degree+) + proportion × (degree++).

**Western blotting**

Cell lines were harvested and lysed in RIPA buffer with a protease inhibitor cocktail (EMD Biosciences) and a phosphatase inhibitor cocktail (Nacalai Tesque, Kyoto, Japan). Twenty micrograms of SDS-treated protein were separated by SDS-PAGE gel and immunoblotted with anti-human MHC class I antibody (dilution 1:5000; ab52922, Abcam), anti-PD-L1 antibody (mouse, dilution 0.2μg/ml, R&D Systems; human, dilution 1μg/ml, ProSci), anti-NF-κB p65 antibody (dilution 1:1000; #3034, Cell Signaling) or anti-ovalbumin (OVA) antibody (dilution 1:500; ab1221, Abcam), and anti-β-actin antibody (dilution 1:1000; ab8227, Abcam). Speciﬁc proteins were visualized using ECL Plus Western Blotting Reagent (GE Healthcare Life Sciences).

**RT-PCR**

Total RNA was extracted from cell lines using the RNeasyMini Kit (QIAGEN). Reverse transcription polymerase chain reaction (RT-PCR) was performed with LightCycler® 480 Probes Master kit (Roche) according to the manufacturer’s instructions. cDNAs were ampliﬁed by Transcriptor First Strand cDNA Synthesis Kit (Roche) using Anchored Oligo (dT)18  primers for 1ug total RNA. PCR ampliﬁcation was programmed as follows: denaturation at 95℃ for 10 seconds, annealing at 55-57℃ for 15 seconds, and extension at 72℃ for 1 seconds. PCRs were terminated after 45 cycles. Primers used for mouse samples were as follows: mouse NF-κB p65/RelA (NM\_009045), forward: 5’-ccc aga ccg cag tat cca t-3’, reverse: 5’-gct cca ggt ctc gct tct t-3’; mouse PD-L1, (GQ904196.1) forward: 5’-cca tcc tgt tgt tcc tca ttg-3’, reverse: 5’-tcc aca tct agc att ctc act tg -3’.

**Flow cytometry**

Cultured cells were incubated with phycoerythrin (PE)-conjugated anti-PD-L1 antibody (mouse clone MIH5, human clone MIH1; BD Biosciences), PE-conjugated anti-mouse MHC class I antibody (clone 28-14-8; eBiosciences) or PE-conjugated anti-mouse interferon-γ receptor 1 (IFNGR1) (clone 2E2; eBiosciences), or a matched isotype control (eBiosciences or BD Biosciences). GIPZ-positive (GIPZ detected by GFP) and 7-AAD-negative gated cells were analyzed as shRela- or shIfng1-transfected cells.

To evaluate tumor-infiltrating lymphocytes (TILs), tumor-bearing mice were euthanized before reaching the moribund state, and TILs were collected from peritoneal dissemination. TILs were stained with PE-conjugated anti-mouse PD-1 antibody (cloneRMP1-30; BD Biosciences), FITC-conjugated anti-mouse CD4 antibody (clone RM4-5; BD Biosciences), APC-conjugated anti-mouse CD8 antibody (clone 53-6.7; BD Biosciences), or matched isotype control antibody (BD Biosciences). Cytometry was performed using a FACS Calibur cytometer (Beckton Dickinson) and the results were analyzed with CellQuestPro software.

**Knockdown of NF-κB p65 (Rela), Ifngr1 expression in cells**

Knockdown of NF-κB p65 in mouse or human cell lines by targeting Rela (NM\_009045) with NF-κB p65 siRNA (human, #6261; mouse, #6337; Cell Signaling) and control siRNA (#6568;Cell Signaling) was performed using Lipofectamine 2000 (Invitrogen) for transfection. ID8shRela and HM1shRela were generated by lentiviral transduction (Thermo Scientific) using two types of GIPZ mouse Rela shRNAs (Rela69, Rela70), which targeted NM\_009045, using trans-lentiviral packaging kits (Thermo Scientific) (Supplementary Fig. 8). ID8shIfngr1 was generated by lentiviral transduction (Thermo Scientific) with GIPZ mouse IFNGR1shRNA, which targets IFN-γ receptor 1, using trans-lentiviral packaging kits (Thermo Scientific) (Supplementary Fig. 15).

**Generation of ID8OVA cells**

To examine the effects of antigen-specific cytolysis by CD8+ Tcells, ID8OVA was generated by lentiviral transduction of ViraPower pLenti6/V5-DEST Gateway Vector (Invitrogen) from PCI-neo-cOVA-plasmid (http://www.addgene.org/25097/) carrying cytoplasmic OVA. The expression vector was generated using the pENTR Directional TOPO Cloning Kit (Invitrogen).

We established ID8OVA (two clones: ID8OVA1, ID8OVA2) from ID8, confirmed by western blotting (Supplementary Fig. 20A), and performed a cytotoxicity assay. High levels of target cell lysis were observed in ID8OVA cells compared to ID8lacZ (control) (Supplementary Fig. 20B), confirming activation of antigen-specific cytolysis by CD8+T cells against ID8OVA cells.

**Cytotoxicity assay**

As effector cells, activated OVA-specific CD8+T cells were prepared as previously described (1). As target cells, ID8 cells were loaded with 10 mg/ml OVA257–264 peptide (Bachem Bioscience) at 37°C for 1 hour. ID8OVA or ID8lacZ cells were co-cultured with activated OVA-specific CD8+T cells at several effector-to-target (E:T) ratios. After 5 hours of co-incubation, the LDH in the co-culture supernatant was detected with a non-radioactive cytotoxicity kit, CytoTox96 (Promega). Cytotoxicity for each E:T cell ratio was calculated as previously described(1).

**CD107a+ expression assay**

After 4 hours of co-incubation of target cells (OVA-loaded ID8-control, PTX-pretreated ID8-control, PTX-pretreated ID8-pdl1KO) with OVA-specific CD8+T cells, ID8-control without OVA loading as negative control, GFP-expressing mouse CD8+T cells at an E:T ratio of 30, the cells were incubated with an Alexa Fluor 647–conjugated anti-mouse CD107a antibody (BioLegend) and analyzed by flow cytometry. PerCP-CD3+ (BD Biosciences) and GFP-positive cells were gated as OVA-specific, GFP-expressing mouse CD8+Tcells.

**References**

1. Abiko, K.,Mandai, M.,Hamanishi, J.; et al. PD-L1 on tumor cells is induced in ascites and promotes peritoneal dissemination of ovarian cancer through CTL dysfunction.Clin Cancer Res,19:1363-1374,2013.