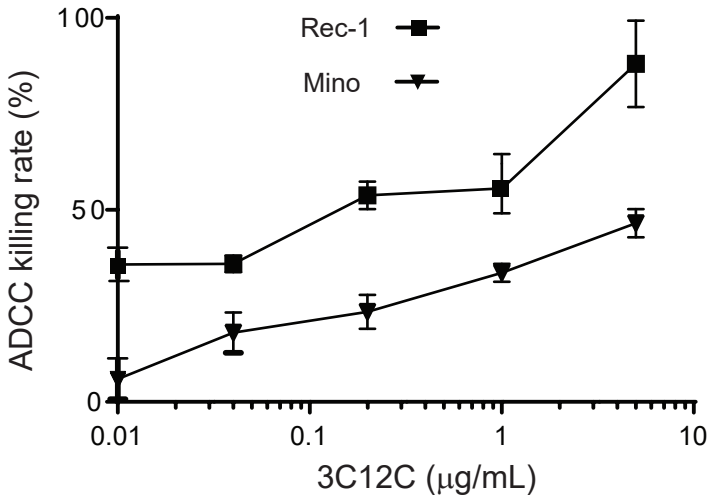
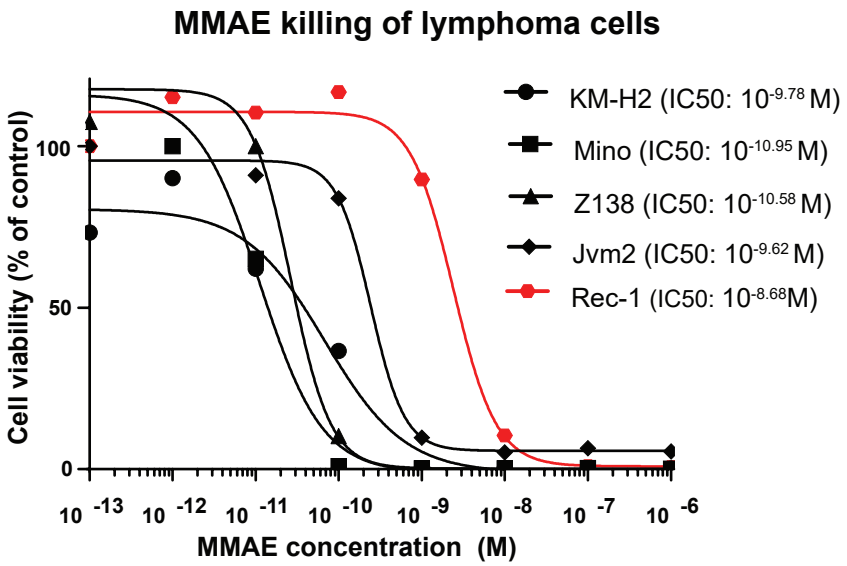
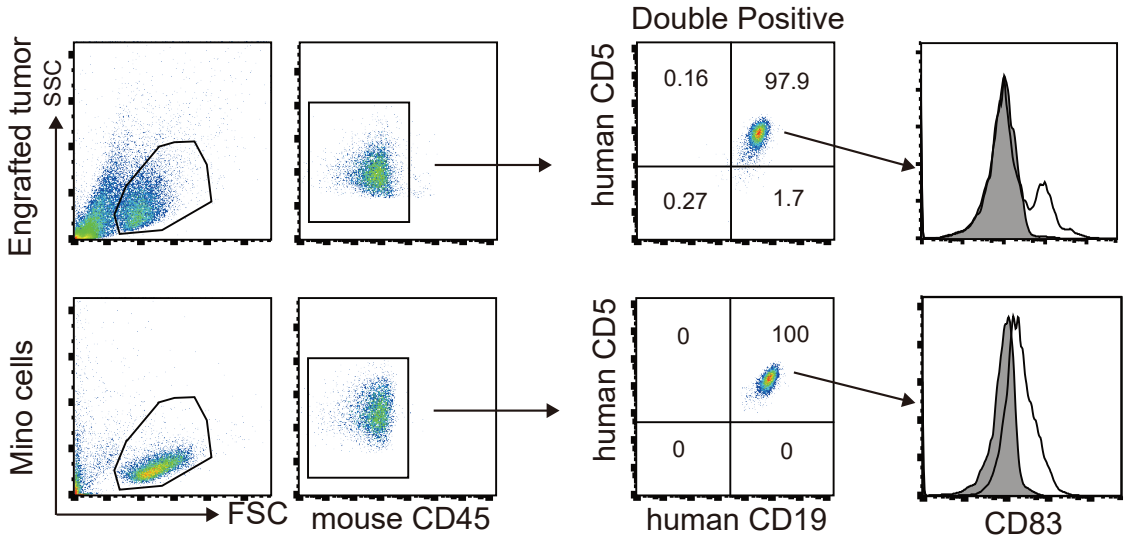


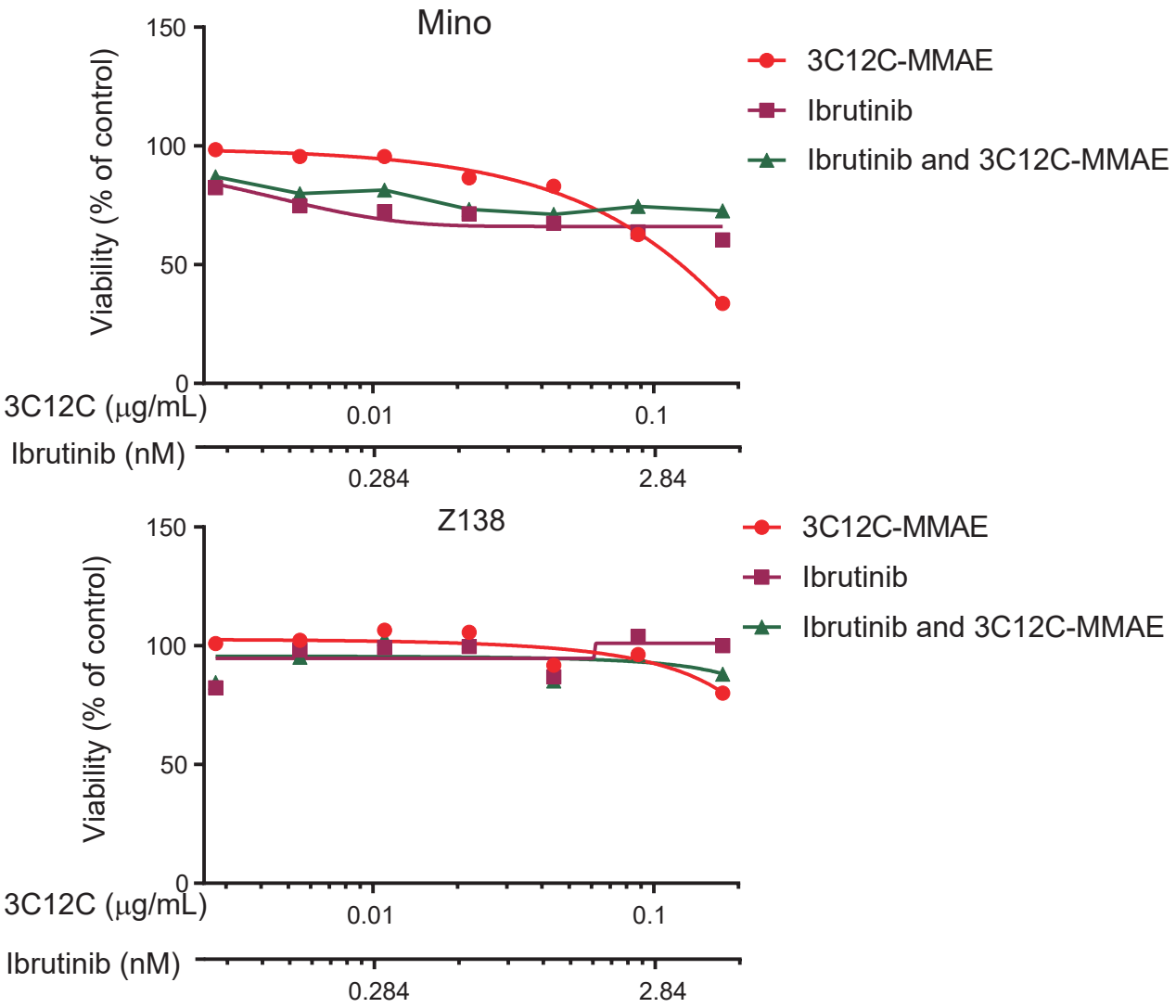
Supplementary figure 1



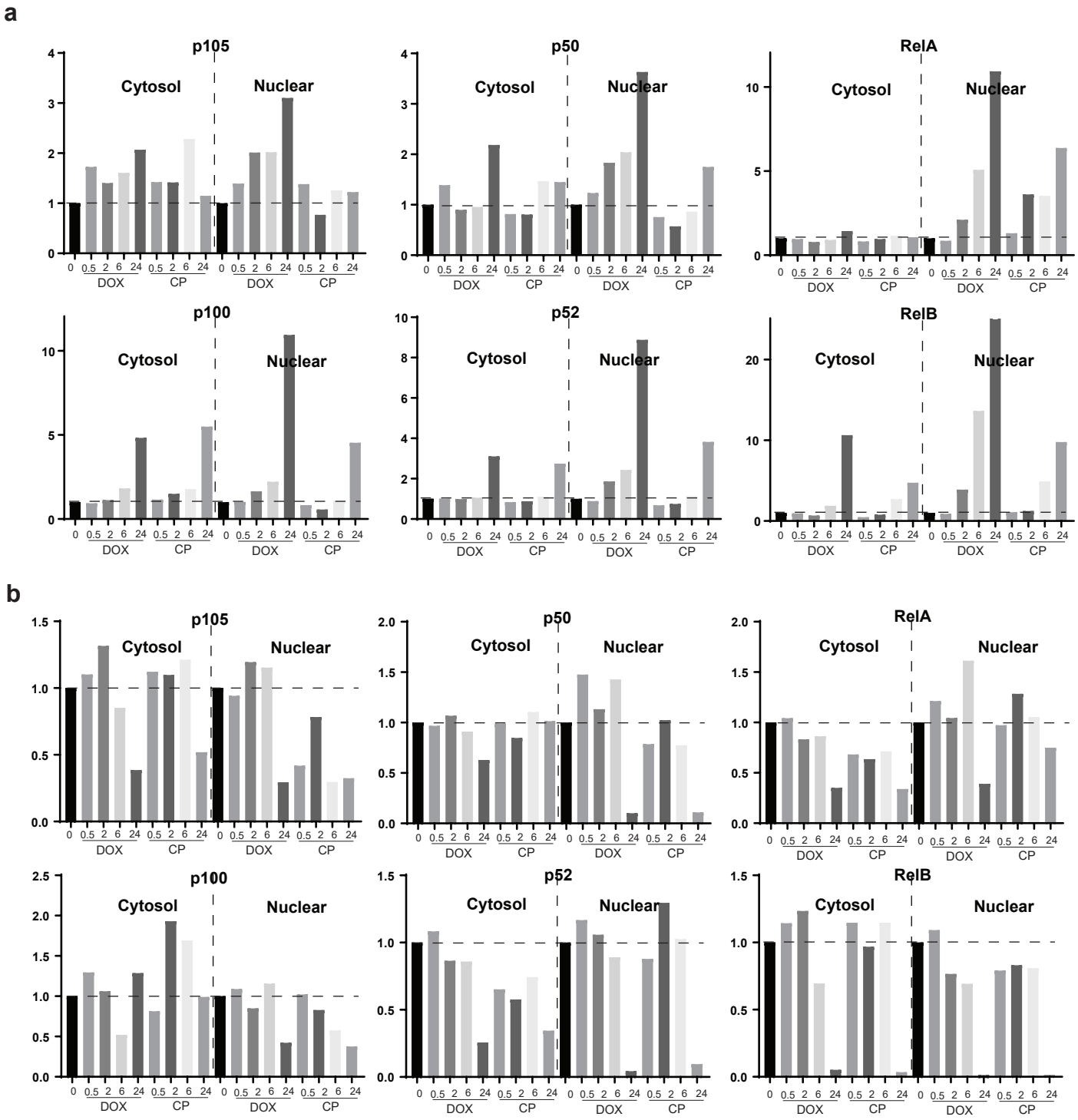
Supplementary figure 2



Supplementary figure 3



Supplementory figure 4



Supplementary figure 5

Supplementary figure legend

Supplementary figure 1: Human anti-human CD83 mAb 3C12C killed $CD83^+$MCL cell lines via ADCC.

Target cells MCL lines Mino, Rec-1 labelled with Calcein-AM were co-cultured with effector cells (human PBMC) at E:T ratio of 25:1 with increasing 3C12C concentration from 0 μg/mL to 5μg/ml at 37ºC for 3 hours. Supernatant was collected for fluorescence reading (excitation 485nm, emission 538nm) of released Calcein. ADCC activity was calculated (n = 3).

Supplementary figure 2: Sensitivity of MCL cell lines to the MMAE.

$CD83^+$ KM-H2, Mino, Rec-1 or $CD83^-$ Z138, Jvm2 cells were cultured with different concentrations of MMAE for 72 hours before determining viable cells by CellTiter-Glo Luminescent Cell Viability assay. Data from one representative experiment (n = 2) with half maximal inhibitory concentration (IC50) shown.

Supplementary figure 3: CD83 expression on the tumour cells from MCL xenograft mice.

Tumor was dissected from MCL engrafted mice at day 6 and tumor cells were isolated for analysing the CD83 expression. Representative flow cytometry plot showing gating strategy (upper) on mouse $CD45^-$ human $CD19^+$ human $CD5^+$ cells and CD83 staining (right) of the engrafted tumor cells. Mino cells in culture was used as control (bottom).

Supplementary figure 4: The combination effect of Ibrutinib and 3C12C-MMAE on the killing of Mino or Z138 cells.

Mino or Z138 cells were cultured with serially diluted 3C12C-MMAE (0.176, 0.088, 0.044, 0.022, 0.011, 0.0055, 0.00275 μg/mL), Ibrutinib (5, 2.5, 1.25, 0.625, 0.312, 0.156, 0.078 nM) or the combination of 3C12C-MMAE/Ibrutinib (0.176/5, 0.088/2.5, 0.044/1.25, 0.022/0.625, 0.011/0.312, 0.0055/0.0.156, 0.00275/0.078) for 72 hours. CellTiter-Glo Luminescent cell viability assay was used to determine the killing effect. Data were from one of three independent experiments.

Supplementary figure 5: Relative expression level of NF-κB signaling molecules in Mino and Z138 cells treated with Doxorubicin or Cyclophosphamide.

Mino or Z138 cells were cultured in the presence of Doxorubicin (DOX, 0.2ug/mL) or Cyclophosphamide (CP, 0.5mg/mL) for 30 minutes, 2 hours, 6 hours and 24 hours. Cytoplasmic and nuclear protein were isolated. Immunoblot analysis of cell lysate was performed with anti-NF-κB antibodies. The relative protein expression level was analysed with Image Lab 4.1 software (Bio-Rad).

Supplementary table: Chemotherapy reagents on CD83 expression of mantle cell lymphoma cell lines

Chemotherapy reagents	Effect on CD83 expression
Doxorubicin	Yes
Cyclophosphamide	Yes
Cytarabine	No
Vincristine	No
Temsirolimus	No
Lenalidomide	No
Bendamustine	No