Supplemental Figure 1. Correlation between splenocyte number and ^{3}H-methyl thymidine incorporation. Different number of splenocytes was seeded in 96-well plates with 1 μg/ml anti-CD3 and 1 μg/ml anti-CD28. After 48 h, 1 μCi of ^{3}H-methyl-thymidine was added to each well. After another 6 h, cells were frozen, thawed, and harvested. The radioactivity of incorporated 3H-thymidine was measured by scintillation.

Supplemental Figure 2. Direct inhibition of T cell proliferation by MSCs. 1×10^4 MSCs were seeded per well into 96-well plate. On the next day, T cells were isolated from mouse spleen with Pan T Cell Isolation Kit II from Miltenyi and labeled with CFSE. Then 2 x 10^5 labeled T cells were added per well with 1 μg/ml anti-CD3 and 1 μg/ml anti-CD28. After 48 h, CFSE signal of T cells were examined by flow cytometry.

Supplemental Figure 3. Intracellular localization of synthetic RNA. **A.** MSCs were transfected with Cy3-labeled control miRNA mimics. 12h later, the cells were harvested upon trypsinization and analyzed for Cy3 presence by flow cytometry using a FACS Calibur. **B and C.** Microscopic demonstration of intracellular Cy3.

Supplemental Figure 4. The Role of iNOS in MSC-mediated immunosuppression.
A. Three NOS isoforms were analyzed by real time-PCR. **B.** Wild type MSCs and iNOS$^{-/-}$ MSCs were activated with 10 ng/ml IFNγ and 10 ng/ml TNFα with or without iNOS inhibitor, L-NMMA for 24h. Supernatant nitrate was measured by Griess assay. **C.** 1×10^4 wild type or iNOS$^{-/-}$ MSCs were seeded into 96-well plate. Supernatant was discarded and 4 x 10^5 splenocytes were added per well with 1 μg/ml anti-CD3 and 1 μg/ml anti-CD28. After 48 h, 1 μCi of ^{3}H-methyl-thymidine was added to each well. After another 6 h, cells were frozen, thawed, and harvested. The radioactivity of incorporated 3H-thymidine was measured by scintillation.

Supplemental Figure 5. The regulatory role of TAB2 on NF-κB. One hundred nanomolar of TAB2 siRNA or control siRNA was transfected into MSCs together with NF-κB reporter plasmid. Twelve hours later, MSCs were treated with 10 ng/ml IFNγ and 10 ng/ml TNFα for various times. Cells were then collected and luciferase activity was determined.