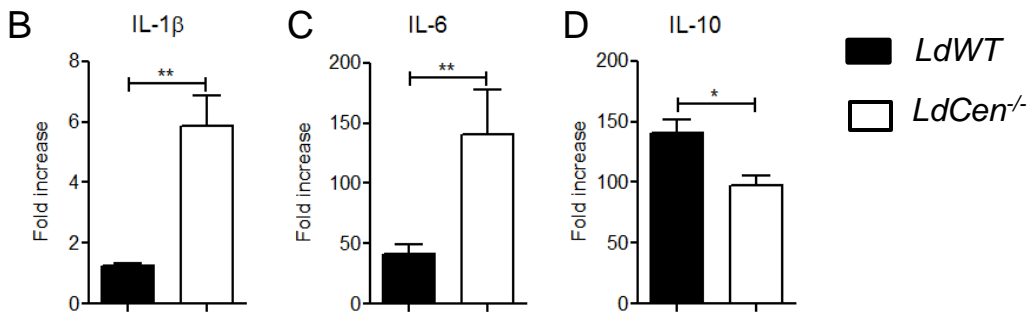
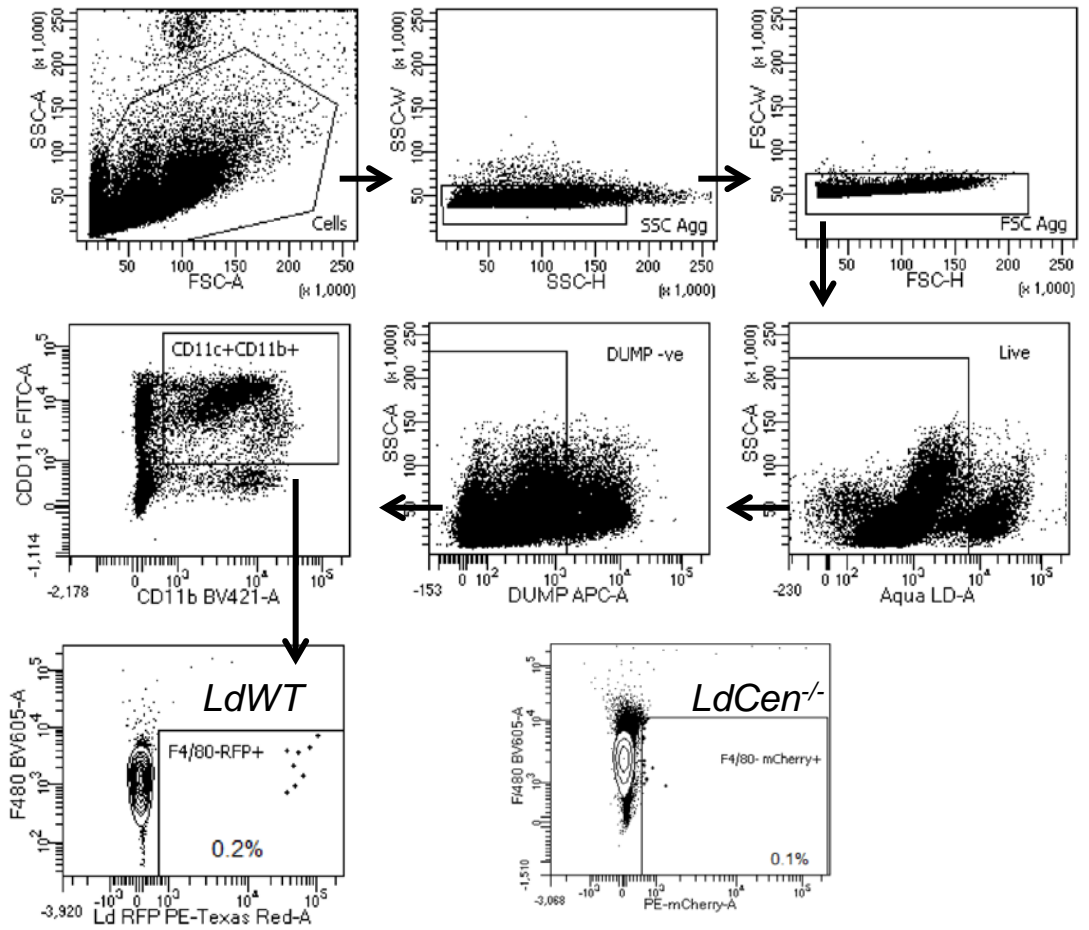
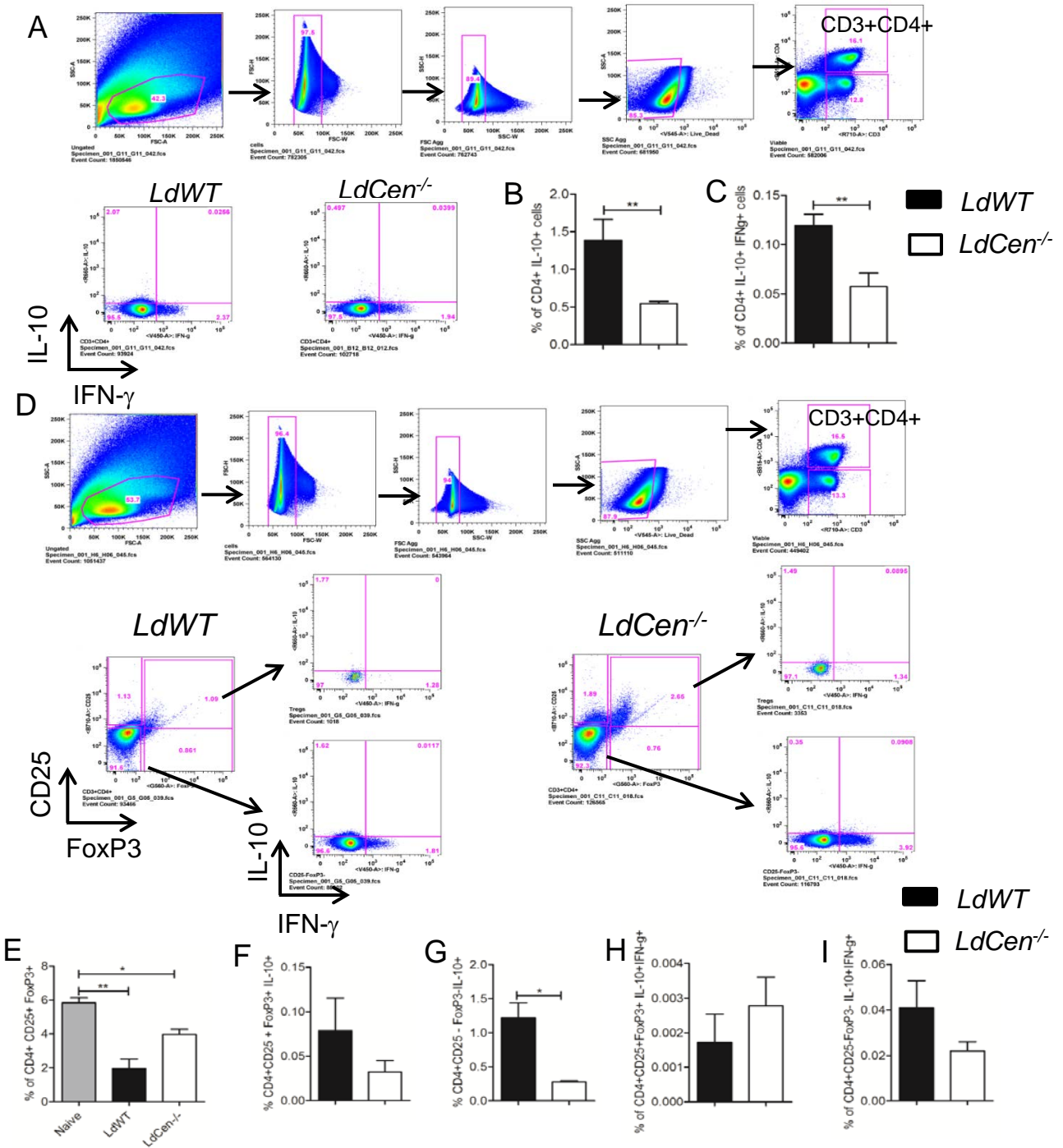


A



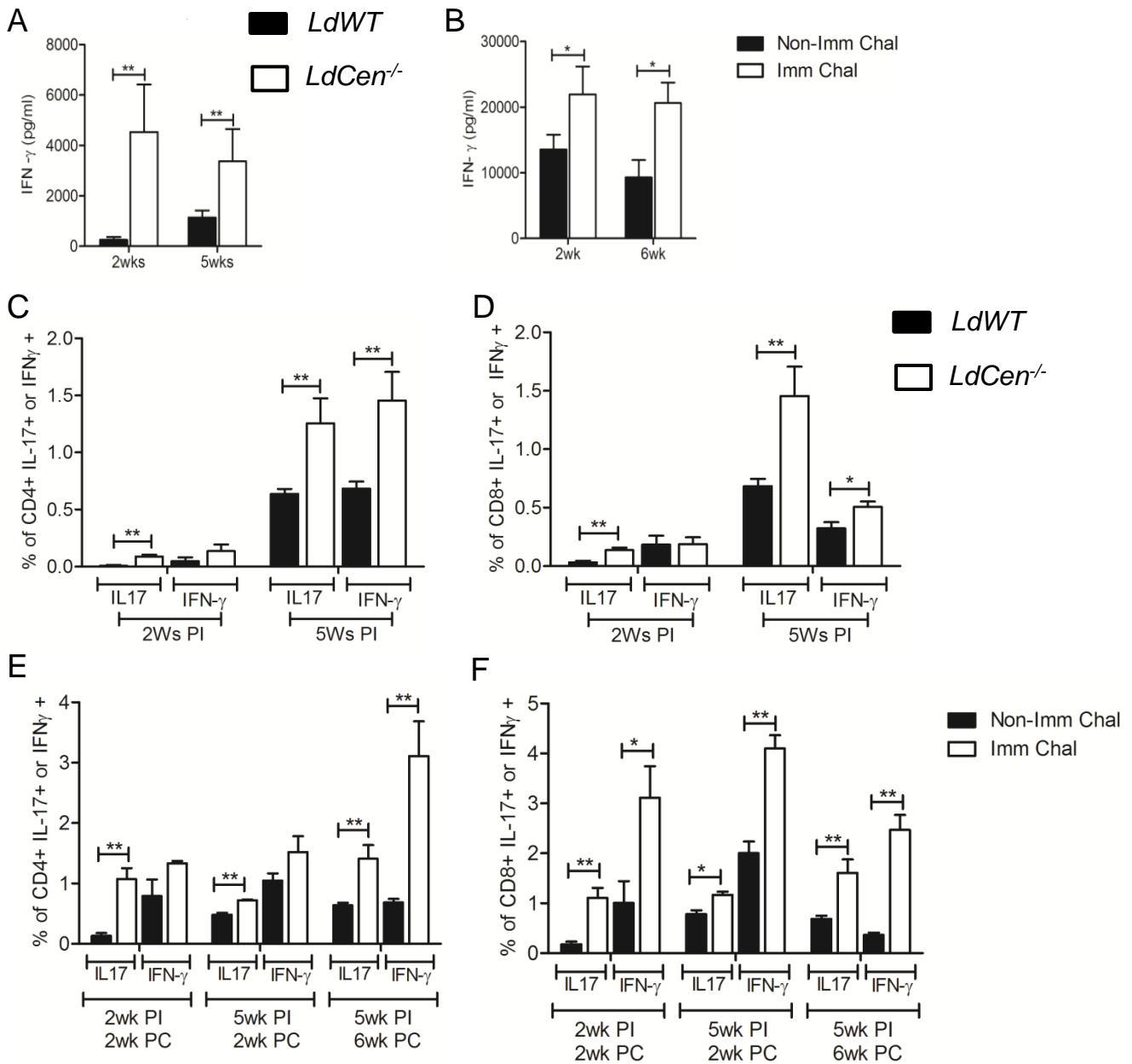
**Figure S1. *LdCen*<sup>-/-</sup> immunization induced the expression of IL-1 $\beta$ , IL-6 and inhibits the expression of IL-10 in splenic dendritic cells isolated from infected C57Bl/6 mice.** (A) Infected cells were sorted from the spleen of different groups of infected mice after two weeks of post-infection/immunization with either *LdWT*-RFP or *LdCen*<sup>-/-</sup>-mCherry by gating live single cells for [lineage (T cells, B cells, NK Cells)<sup>-</sup> and F4/80<sup>-</sup>CD11b<sup>+</sup>CD11c<sup>+</sup>RFP/m-Cherry<sup>+</sup>] cells. (B-D) mRNA expression levels of IL-1 $\beta$ , IL-6, and IL-10 were measured from infected DCs, and expressed as fold increase over naïve DCs. The data represent the mean values + SEM of results from two independent experiments. In each experiment more than eight mice splenocytes were pooled to get enough infected DCs. \*, P < 0.05; \*\*, P < 0.005.

Figure S2



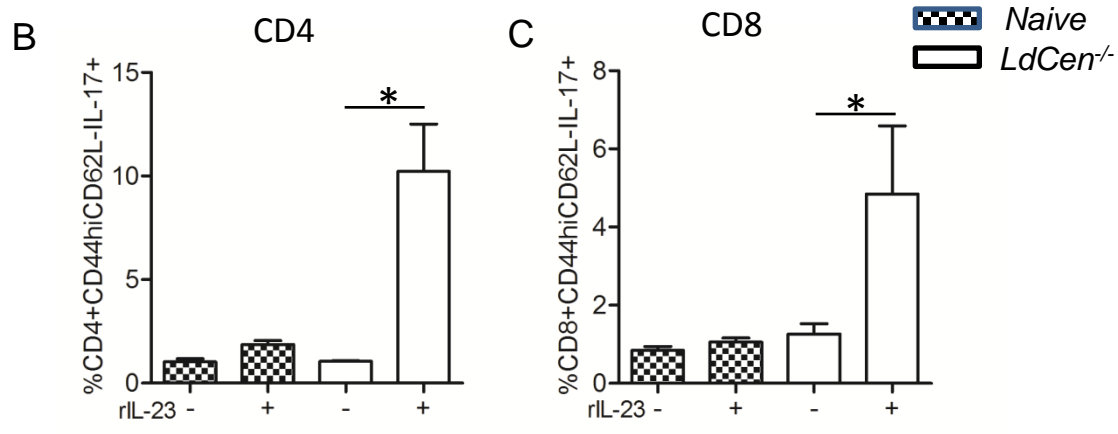
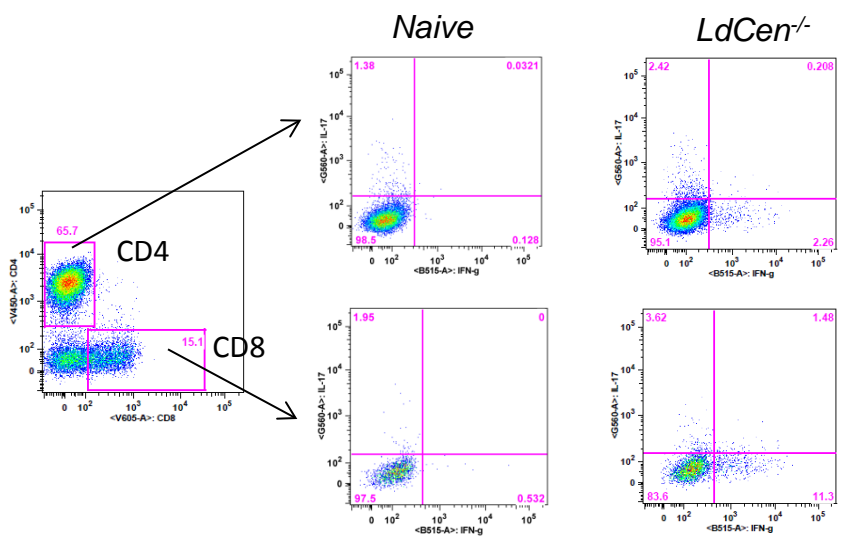
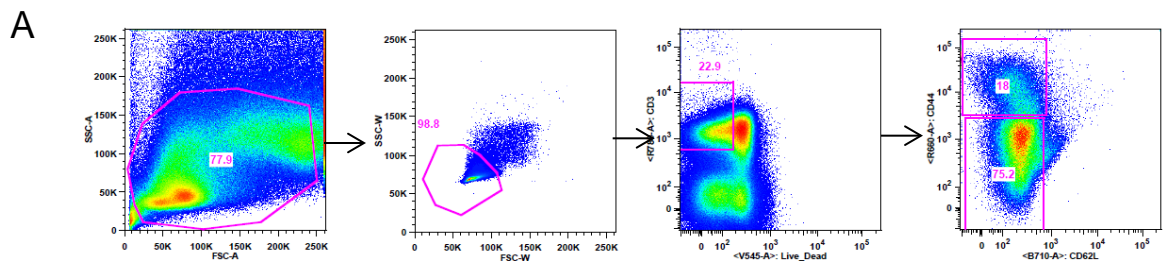
**Figure S2. *LdCen*<sup>-/-</sup> immunized mice showed significant attenuation of IL-10 producing nTreg and Tr1 cells compared to *LdWT* infected mice.** *LdWT* or *LdCen*<sup>-/-</sup> infected mice were sacrificed five weeks of post- infection. Splenocytes were collected and cultured in presence of *Leishmania* Ag and PMA/Ionomycin. Flow cytometry analysis of *Leishmania* Ag stimulated splenocytes (A) gating strategy for IL-10 and IFN- $\gamma$  secreting CD4 T cells. (B) Bar-diagram represents IL-10 secreting, (C) IL-10 and IFN $\gamma$  double producing CD4 T cells. (D) Gating strategy and representative flow plots for the nTreg and Tr1 cells producing IL-10 and IFN- $\gamma$ . (E) Mean percentage of CD25+FOXP3+CD4 T cells; (F) Percent of IL-10 producing nTreg and (G) percent of IL-10 producing Tr1 cells. (H) Percent of nTreg producing IL-10 and IFN- $\gamma$ ; (I) Percent of Tr1 cells producing IL-10 and IFN- $\gamma$ . The data represent the mean values + SEM of results from three independent experiments. \*, P < 0.05 \*\*, P < 0.005.

Figure S3



**Figure S3. *LdCen*<sup>-/-</sup> immunization induced Th1 axis.** (A) *LdWT* or *LdCen*<sup>-/-</sup> infected mice were sacrificed at two and five weeks after infection. Splenocytes were cultured and stimulated with *Leishmania* Ag. Culture supernatants were collected and level of IFN- $\gamma$  was measured by the multiplex mouse cytokine ELISA kit as described in the Materials and Method section. (B) Five weeks post-immunized mice were challenged with virulent *L. donovani* parasites. At two and six weeks post challenge both immunized and non-immunized mice were euthanized, splenocytes were cultured, stimulated with *Leishmania* Ag and culture supernatants were collected and concentration of IFN- $\gamma$  (B) was measured by the multiplex mouse cytokine ELISA. Flow cytometry analysis of *Leishmania* Ag stimulated splenocytes was performed. (C-D) bar diagram representing IFN- $\gamma$  and IL-17 secreting CD4 and CD8 T cells in *LdWT* infected and *LdCen*<sup>-/-</sup> immunized mice at indicated time points. (E-F) Bar diagram representing IFN- $\gamma$  and IL-17 secreting CD4 and CD8 T cells from naïve challenged and immunized challenged mice at indicated time points. The data represent the mean values + SEM of results from two independent experiments. \*, P < 0.05; \*\*, P < 0.005. PI, Post-Immunization; PC, Post-Challenge.

Figure S4



**Figure S4. Treatment with rIL-23 significantly enhanced the percentage of IL-17 producing CD4 and CD8 effector memory cells.** Mice were immunized with *LdCen*<sup>-/-</sup> and at 12 weeks post-immunization mice were sacrificed. Splenocytes were isolated and cultured in presence of exogenously added recombinant IL-23. Flow cytometry analysis of IL-17 producing CD4 and CD8 effector memory cells. (A) Gating Strategy and representative flow plots; (B-C) Bar diagram represents IL-17 secreting effector memory CD4 (CD4+CD44hiCD62L-IL-17+) and CD8T (CD8+CD44hiCD62L-IL-17+) cells. The data represent the mean values + SEM of results from two independent experiments. \*, P < 0.05.