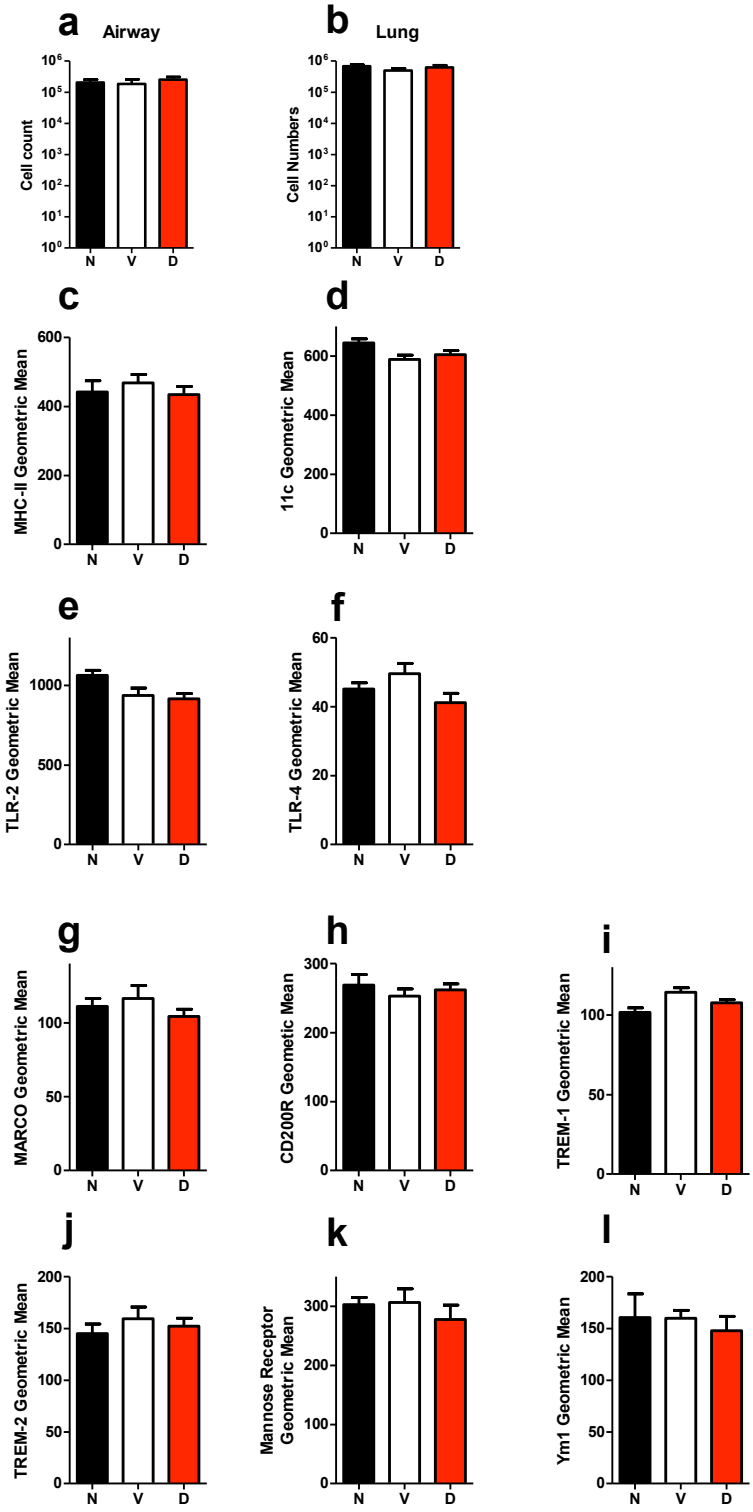
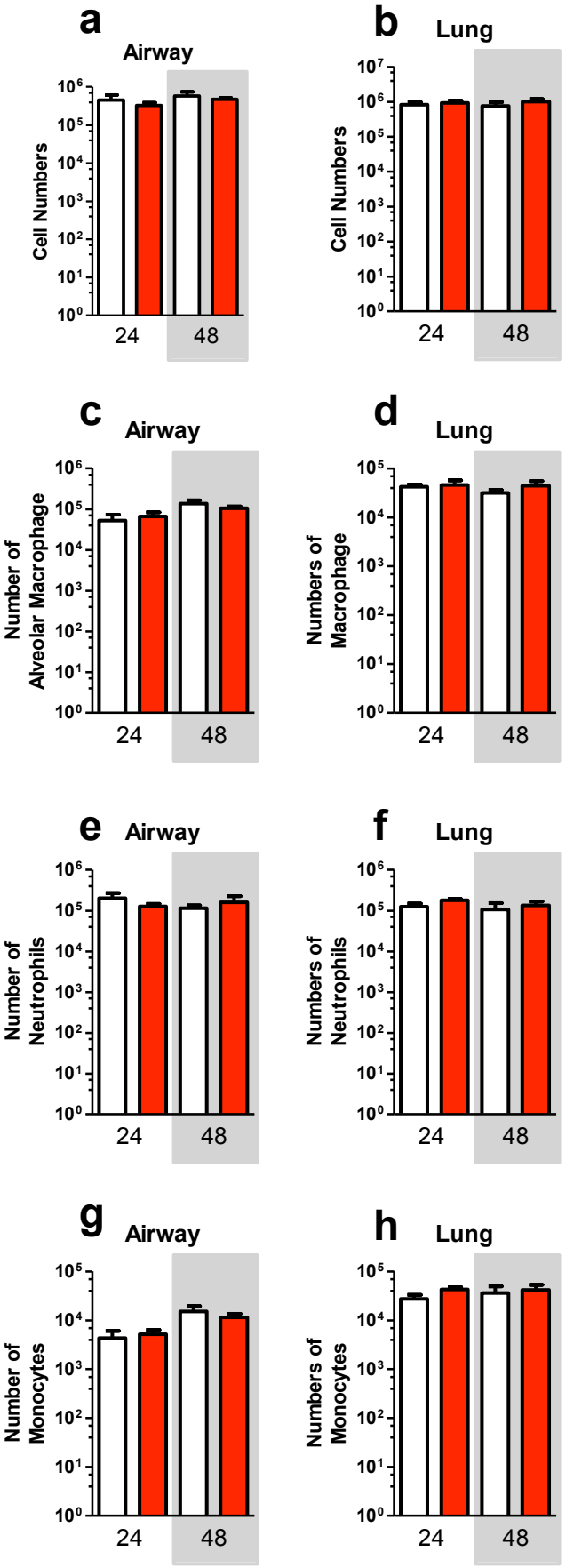
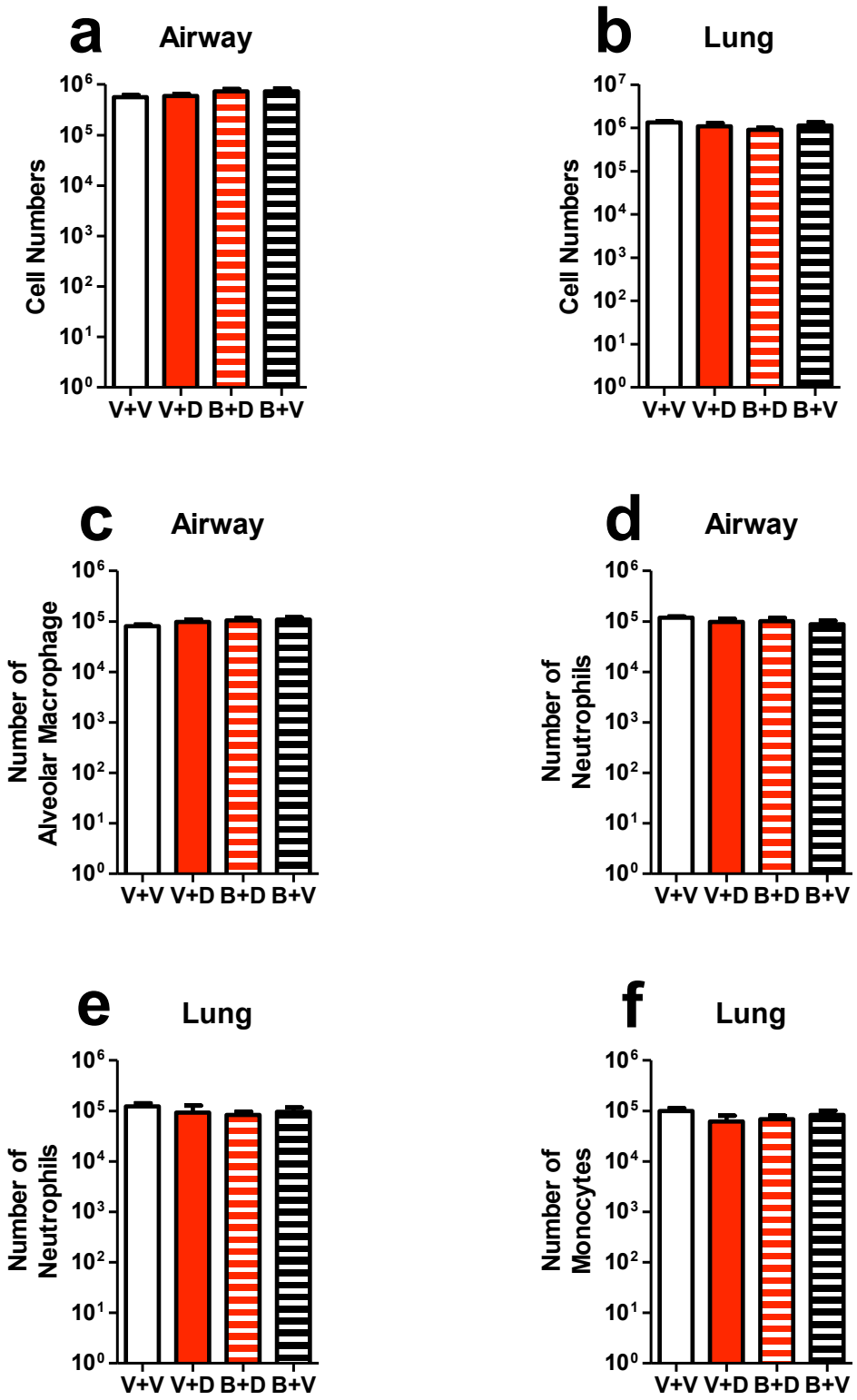


Supplementary Figure 1. Diazepam does not affect immune homeostasis in the lung. Mice were pre-treated with diazepam (D, 2 mg kg^{-1}), vehicle (V, 4% ethanol in PBS) or left untreated (N, naïve) and 7 days later total airway (a) and lung (b) cellularity assessed by trypan blue exclusion. Airway alveolar macrophages were also assessed for **c,** MHC-II, **d,** CD11c, **e,** TLR-2, **f,** TLR-4, **g,** MARCO, **h,** CD200R, **i,** TREM-1, **j,** TREM-2, **k,** mannose receptor, and **l,** YM-1 by flow cytometry. Results presented as the geometric mean of fluorescence (± s.e.m) of n=5 mice/group.

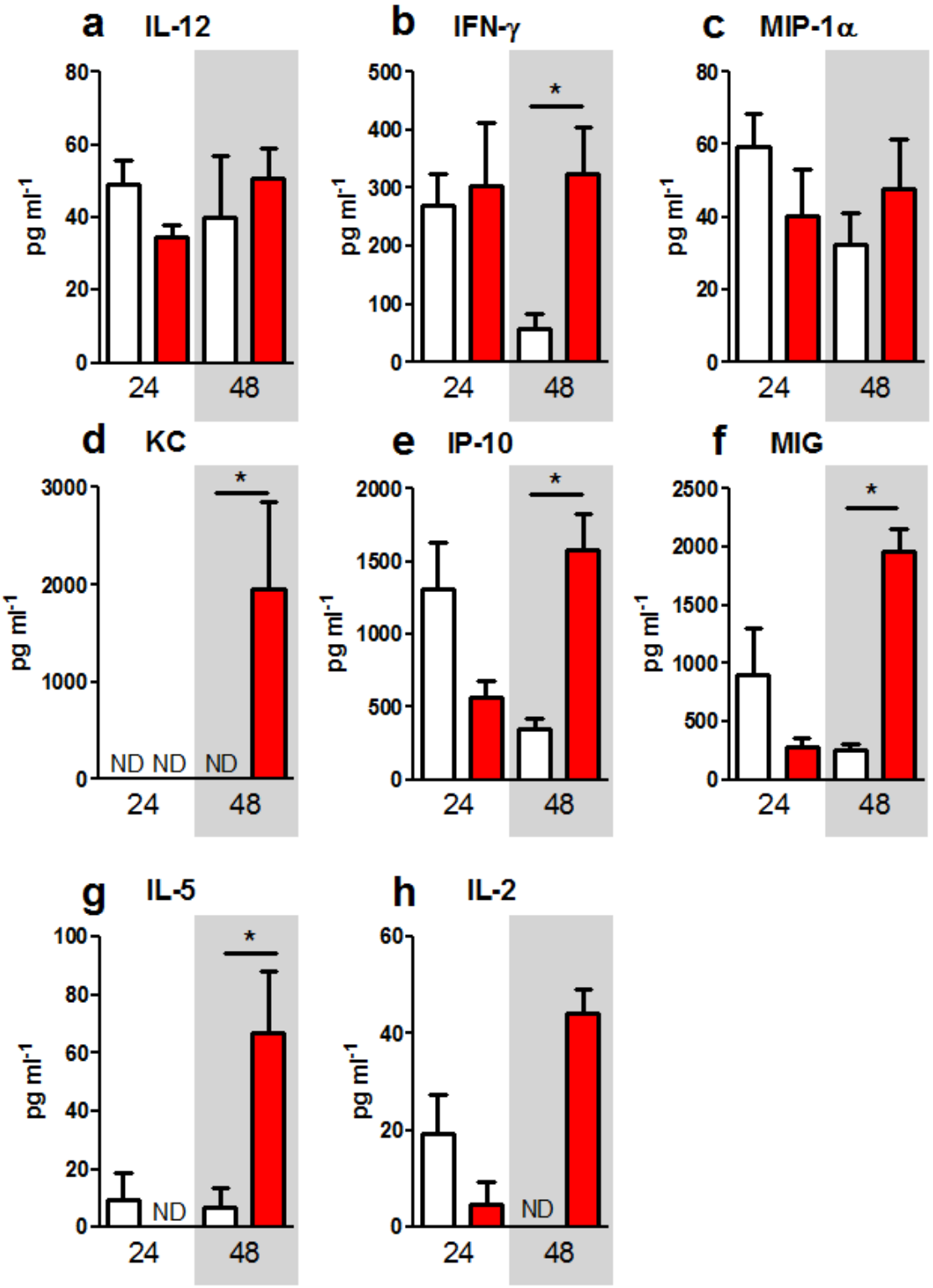


Supplementary Figure 2. Diazepam pre-treatment does not affect cell recruitment post-infection. Mice were administered diazepam (2 mg kg^{-1}) (red bar) or vehicle (4% ethanol in PBS) (white bar) twice daily for 7 days prior to and during infection with *Streptococcus pneumoniae*. Total viable cell counts in the airway (**a**) or lung (**b**) were enumerated by trypan blue exclusion at 24 and 48 hours after the infection. The number of airway macrophages (**c**), neutrophils (**e**) and monocytes (**g**) were assessed by flow cytometry, as were macrophages (**d**), neutrophils (**f**) and monocytes (**h**) in homogenised lung. All graphs show mean ± s.e.m. n = 5/group.



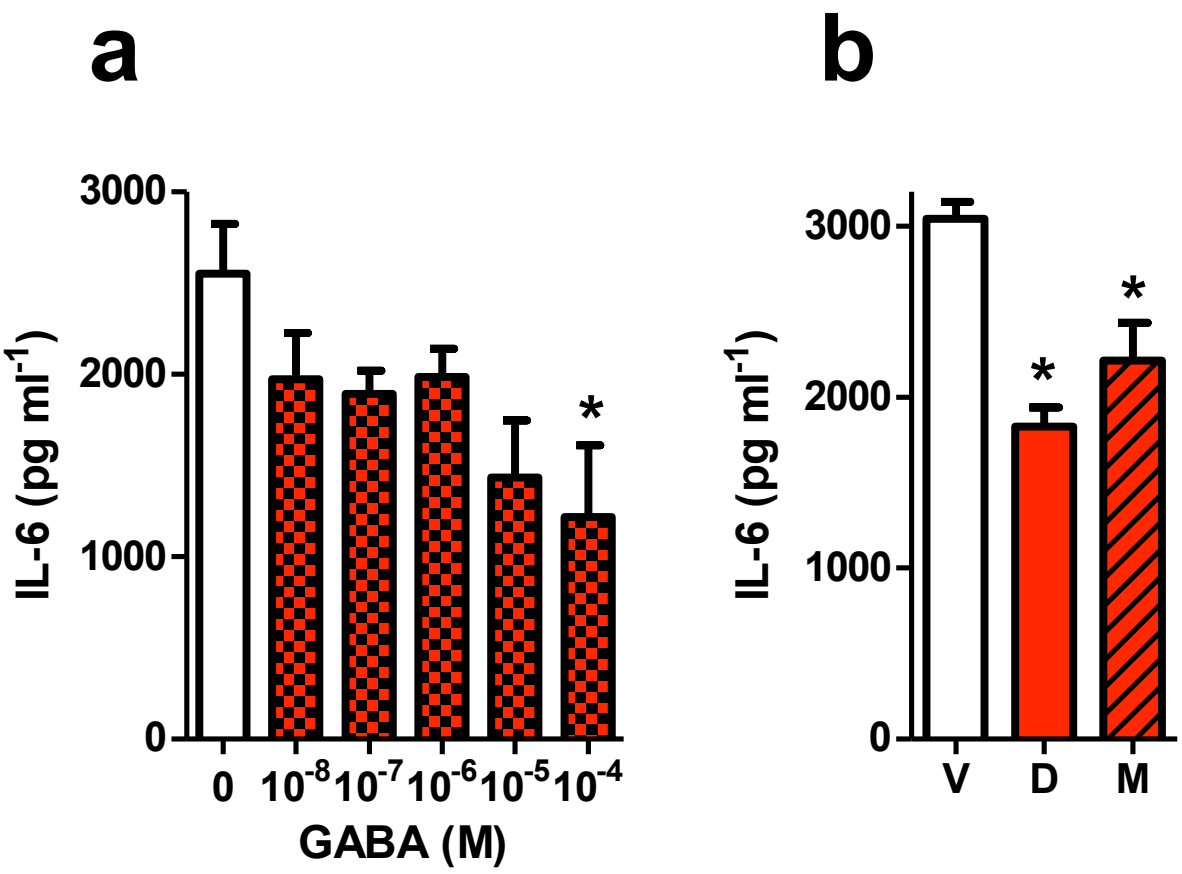
Supplementary Figure 3. Modulation of $GABA_A$ receptors does not affect cell recruitment during infection. Mice were treated with the vehicle for bicuculline and 30 minutes later given the vehicle for diazepam (PBS) (V+V) or diazepam (2 mg kg^{-1}) (V+D). Two other groups received bicuculline followed by diazepam (B+D) or the vehicle for diazepam (4% ethanol in PBS) (B+V). Total cell counts in the (**a**) airway or (**b**) lung were assessed 48 hours after intranasal *Streptococcus pneumoniae* infection by trypan blue exclusion and the number of airway macrophages (**c**) and neutrophils (**d**) or lung neutrophils (**e**) and monocytes (**f**) assessed by flow cytometry. n=12-14 mice/group. All graphs show the mean ± s.e.m (n=8/group).

Suppl. Fig. 3

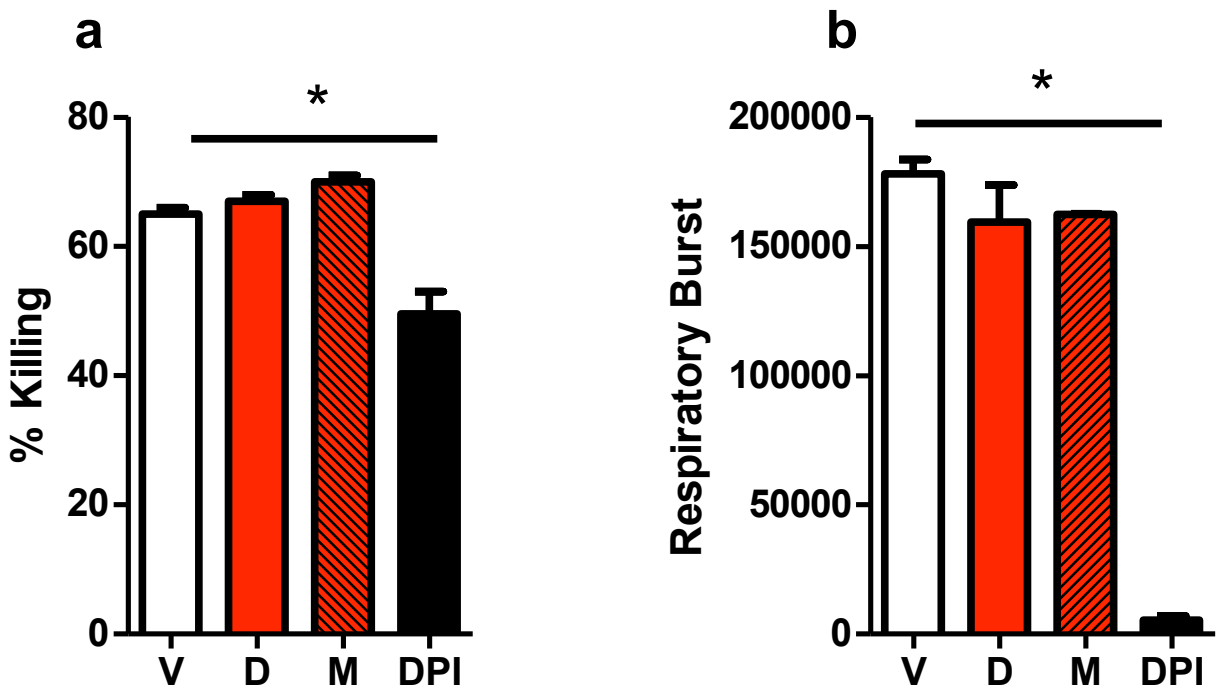


Supplementary Figure 4. Effect of Diazepam on cytokine production post-infection. Mice were administered diazepam (2 mg kg^{-1}) (red bar) or vehicle (4% ethanol in PBS) (white bar) twice daily for 7 days prior to and during infection with *Streptococcus pneumoniae*. 24 or 48 hours after infection, IL-12 (**a**), IFN-γ (**b**) MIP-1α (**c**) KC (**d**), IP-10 (**e**), MIG (**f**), IL-5 (**g**) and IL-2 (**h**) were assessed by luminex on airway lavage. *p<0.05 vs. vehicle. All graphs show the mean ± s.e.m (n = 5/group). ND = not detected.

Suppl. Fig. 4



Supplementary Figure 5. $GABA_A$ modulators reduce alveolar macrophage production of IL-6 *ex-vivo*. Airway macrophages were recovered by lavage and incubated with the dose of GABA shown (**a**), vehicle (V), diazepam (D, 10µM) or the $GABA_A$ agonist muscimol (100µM) (**b**) together with LPS (100 ng ml^{-1}). IL-6 release was quantified by ELISA 16 hours later. All graphs show mean ± s.e.m (n = 4/treatment).*p<0.05 versus vehicle.



Supplementary Figure 6. Neutrophil responses are not affected by $GABA_A$ modulators. Human neutrophils were incubated with $GABA_A$ modulators, diazepam (D, 10µM) or the $GABA_A$ agonist muscimol (M, 100µM) and killing of *Staphylococcus* aureus (**a**) and Phorbol 12-myristate 13-acetate stimulated respiratory burst *ex-vivo* (**b**) compared to a vehicle control. As a positive control on both of these processes neutrophils were incubated with the NADPH oxidase inhibitor diphenyliodonium (DPI). Results represent the mean ± s.e.m. of n = 3/group. *$p<0.05$ versus vehicle.