

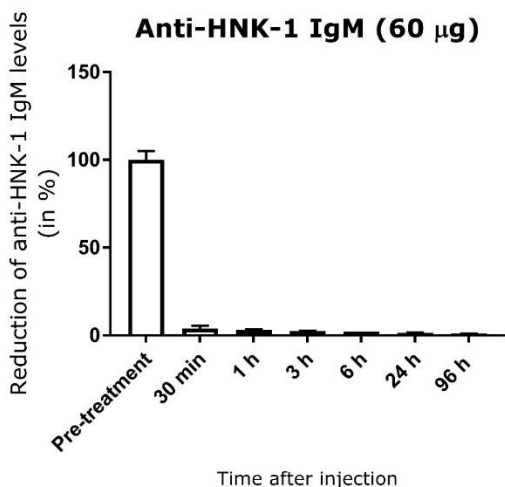
## Selective inhibition of anti-MAG IgM autoantibody binding to myelin by an antigen specific glycopolymer

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\*equal contribution

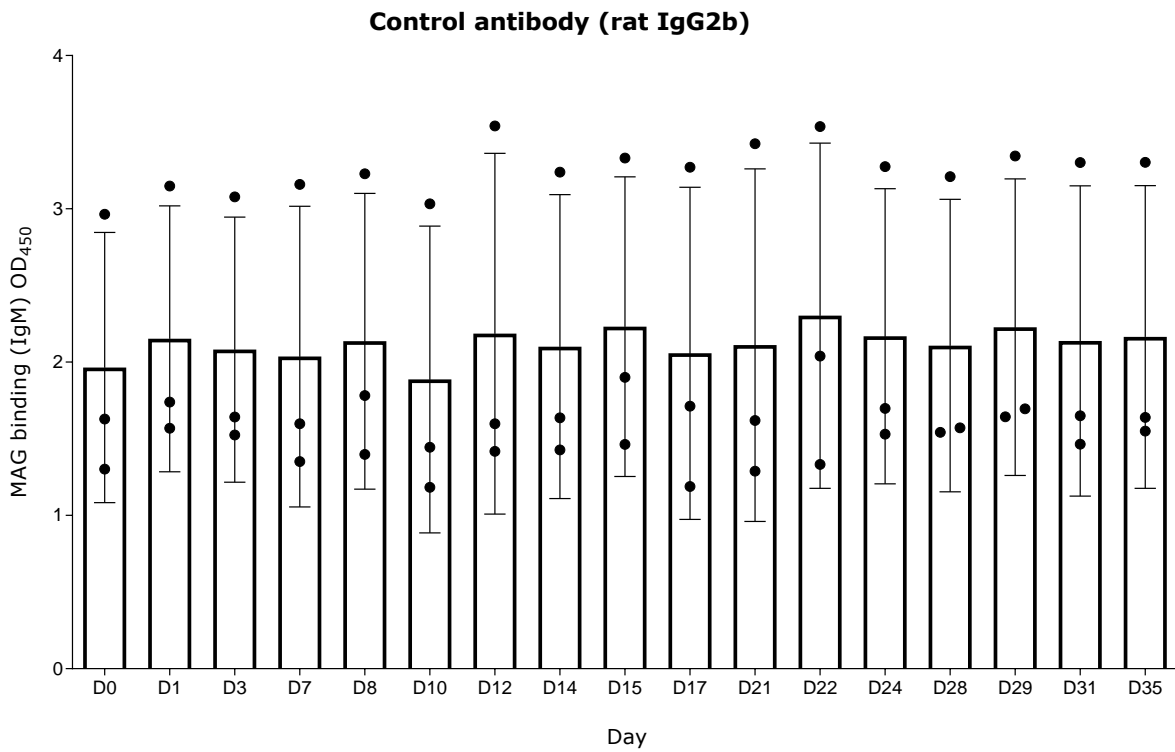
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### Supplementary information

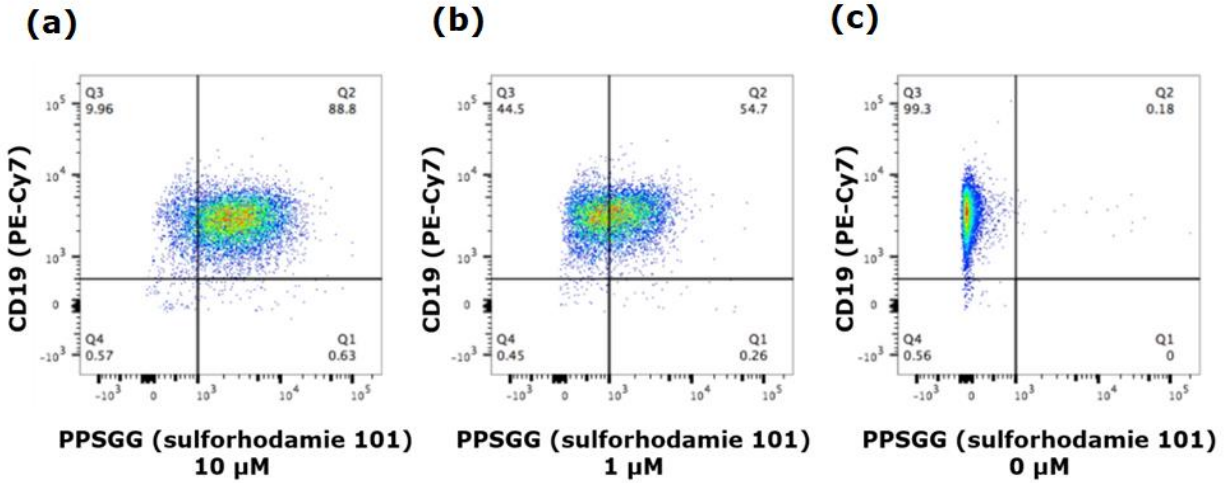


**Supplementary Figure 1. Binding and removal of circulating anti-HNK-1 IgM by PPSGG in mice.** Mice were intravenously injected with 60 µg (n = 3 mice) anti-HNK1 IgM (pre-treatment) was followed by the intravenous injection of 10 µg PPSGG (after 10 minutes). Blood samples were taken at

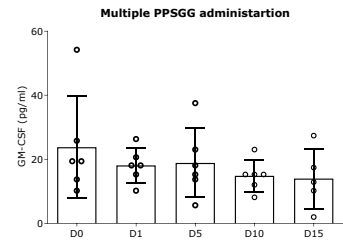
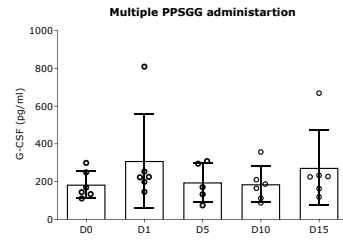
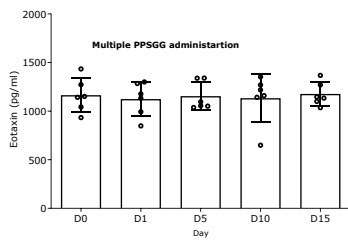
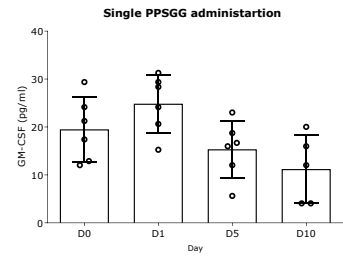
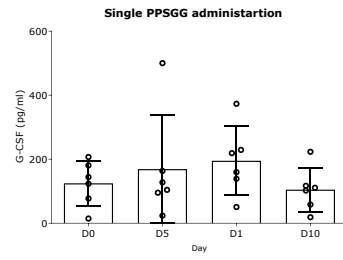
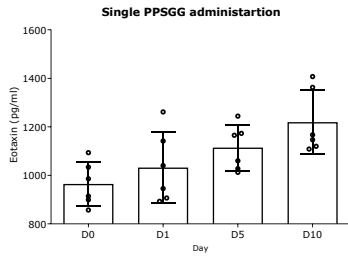
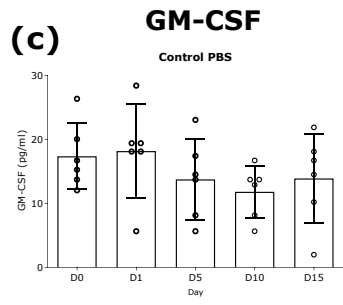
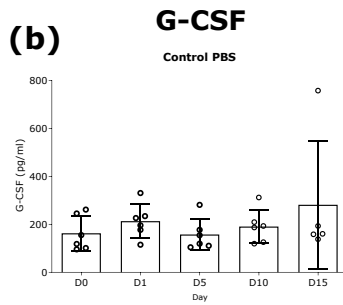
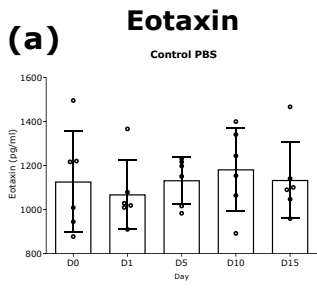
different time points (30 min to 96 h) after PPSGG administration and the titers of free anti-HNK-1 IgM were determined by ELISA.

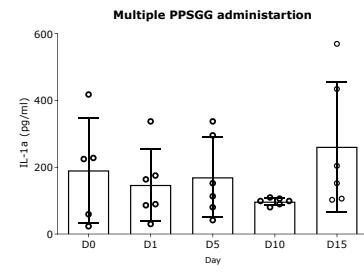
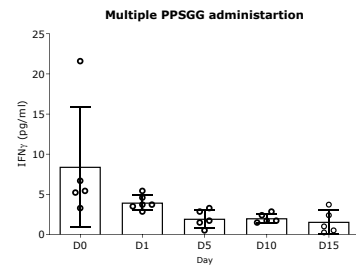
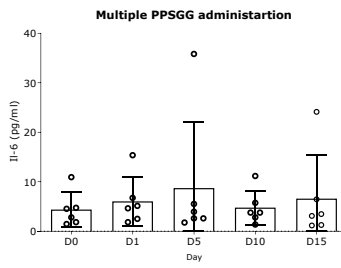
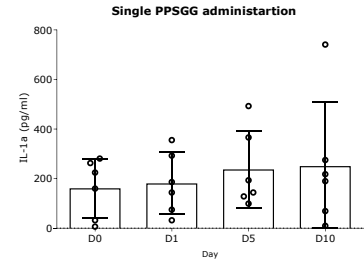
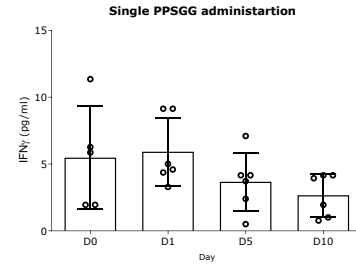
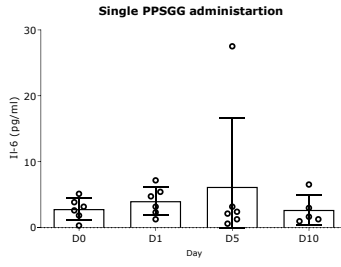
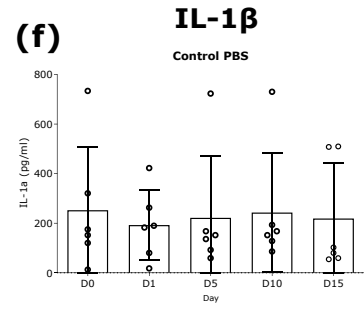
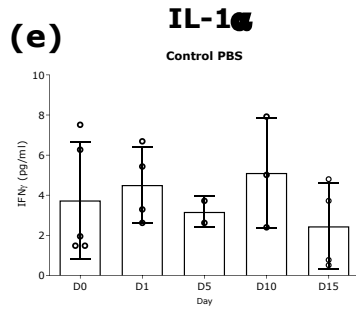
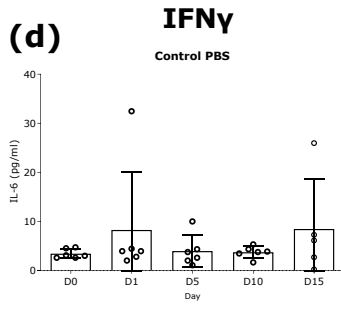


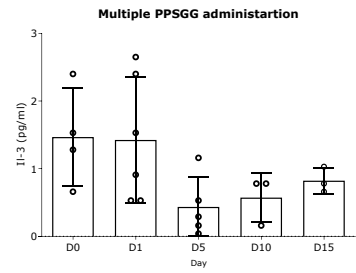
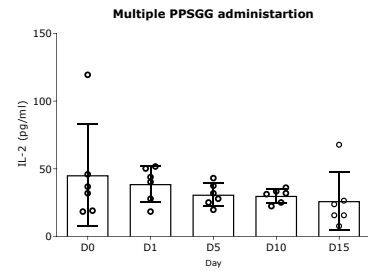
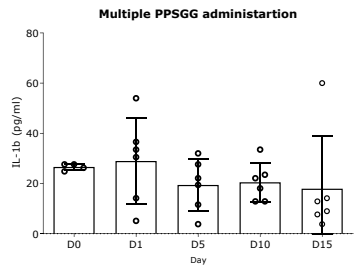
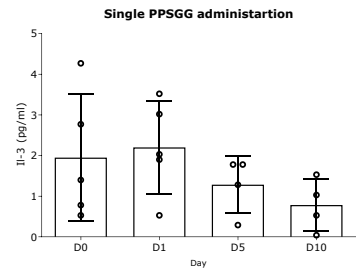
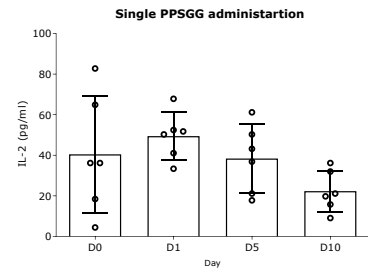
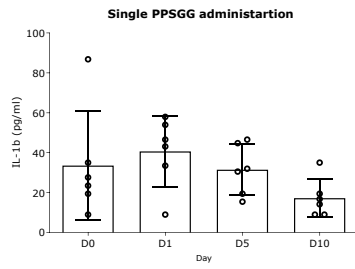
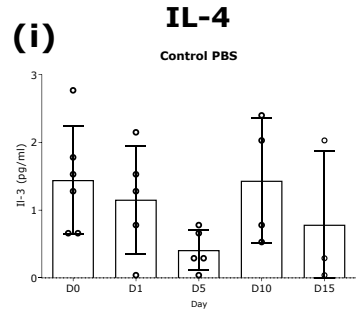
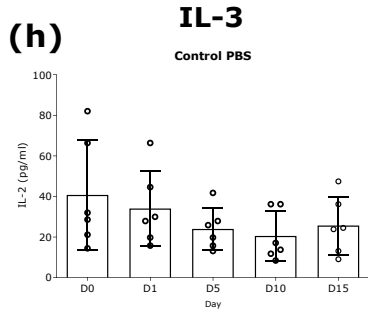
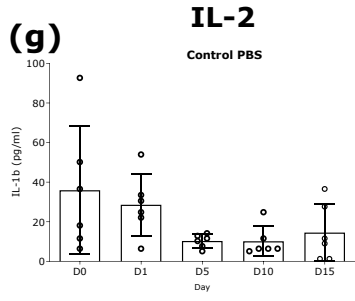
**Supplementary Figure 2. Effects of antibody on anti-MAG IgM antibodies in the immunological BALB/c mouse model for anti-MAG neuropathy.** Single intravenous injection of 240  $\mu$ g of a control antibody did not affect the anti-MAG IgM antibody titers in mice. Anti-MAG IgM titers were analysed by ELISA and data are indicated by mean and standard deviation in which the line represents the mean  $\pm$ SD.

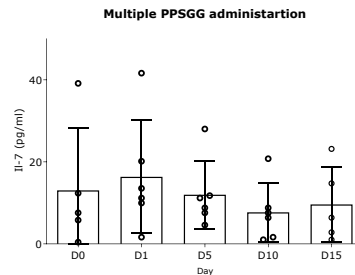
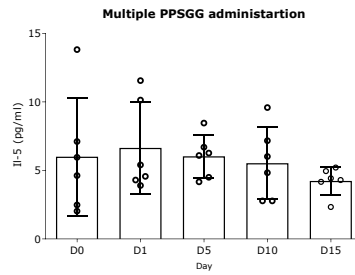
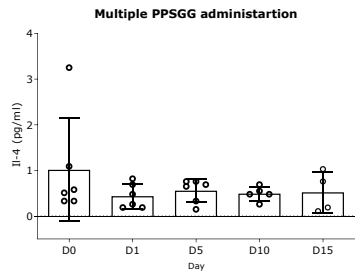
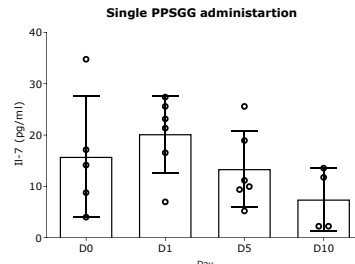
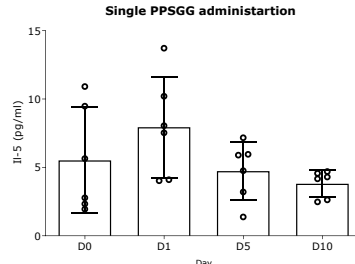
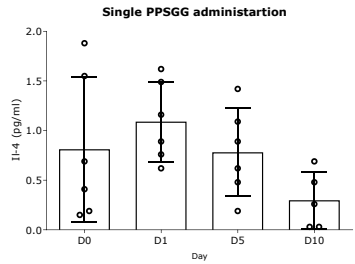
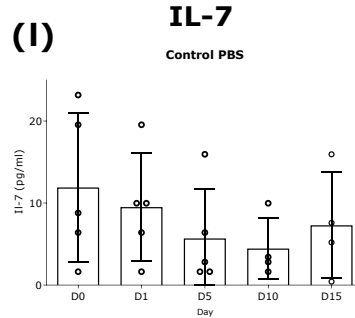
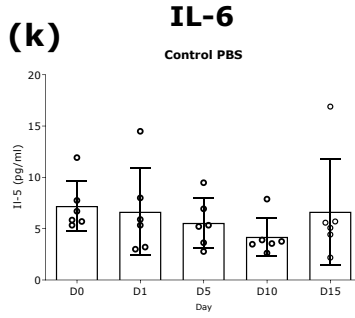
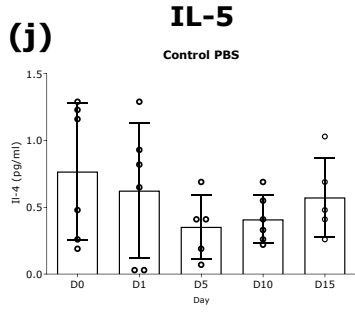


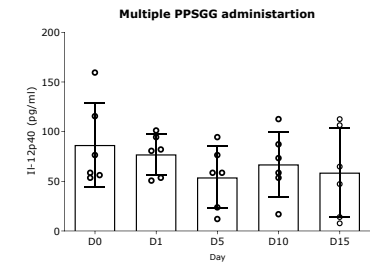
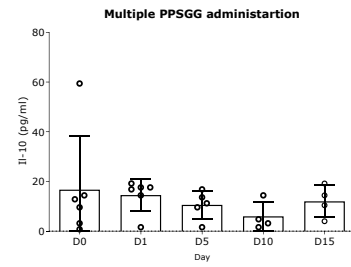
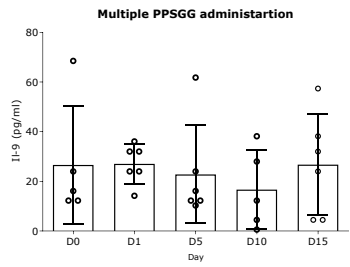
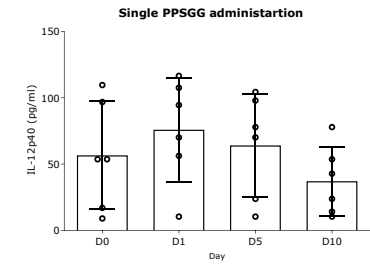
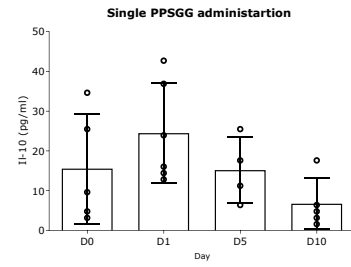
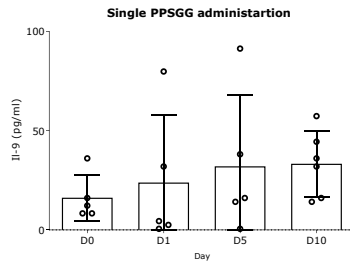
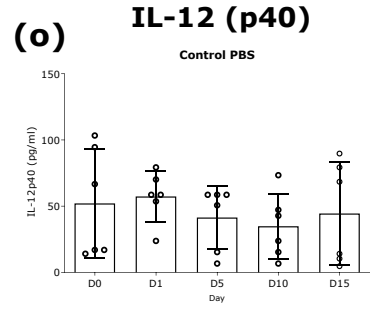
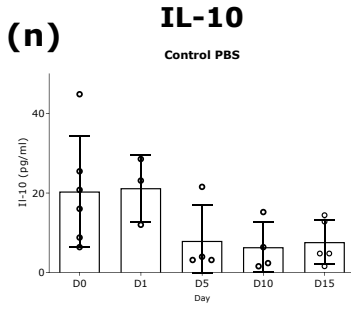
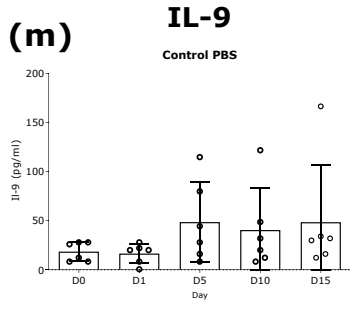
**Supplementary Figure 3. Concentration-dependent binding of PPSGG to human B cells.** Binding of fluorescently labelled PPSGG to B cells of anti-MAG neuropathy patients was assessed by flow cytometry and fluorescent microscopy. B cells were either incubated with 10  $\mu$ M PPSGG (**A**), 1  $\mu$ M PPSGG (**B**), or PBS (**C**).



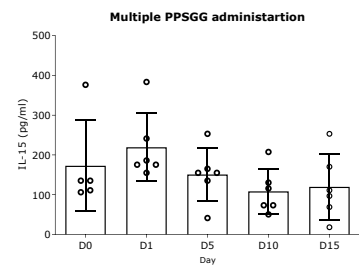
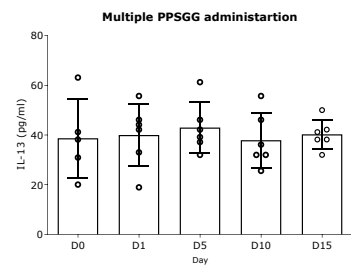
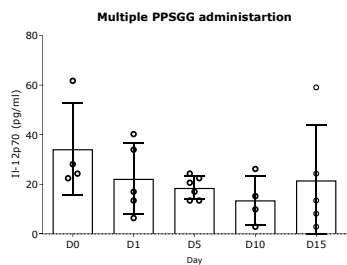
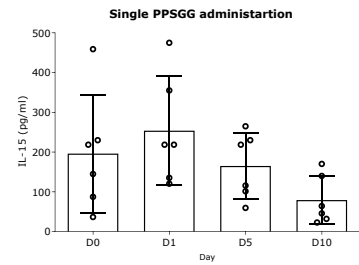
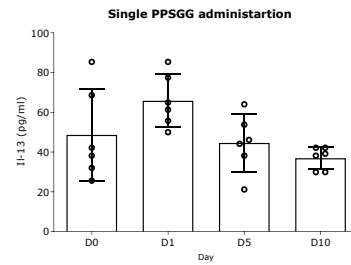
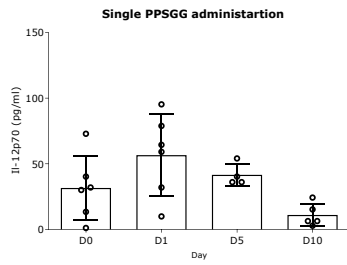
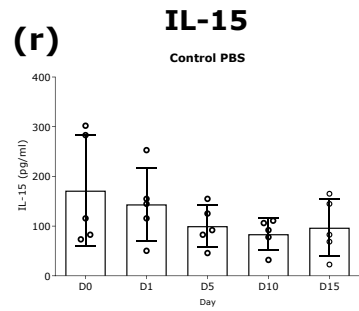
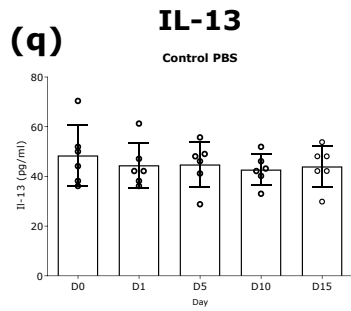
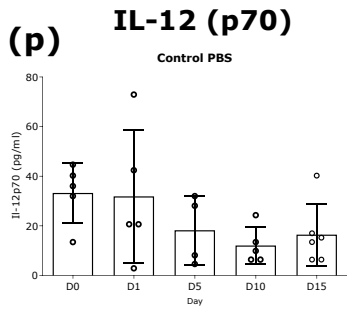


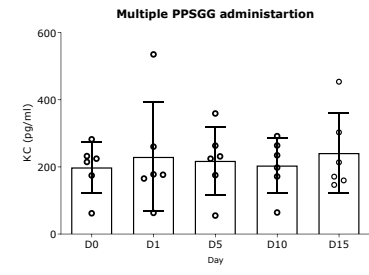
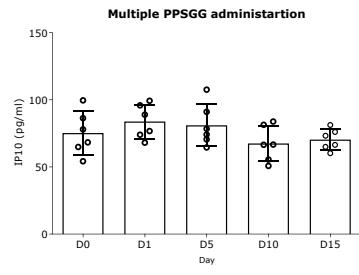
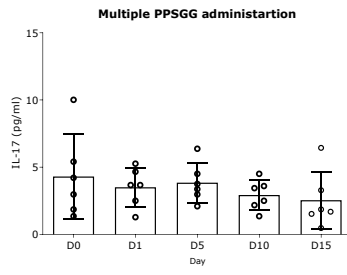
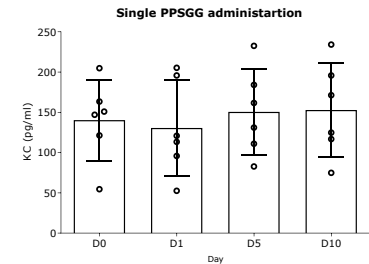
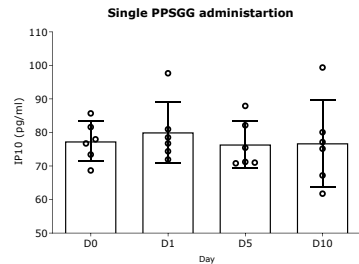
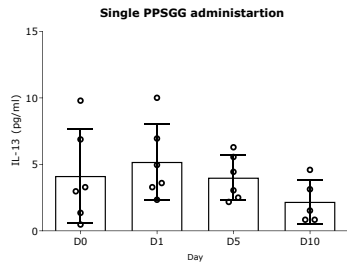
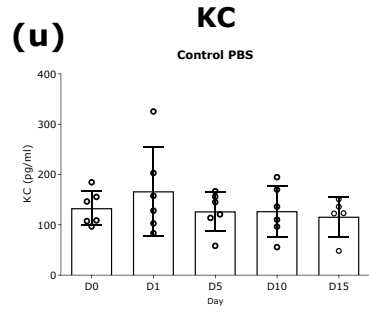
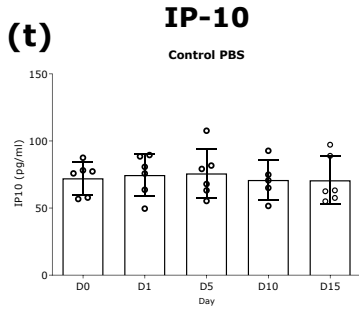
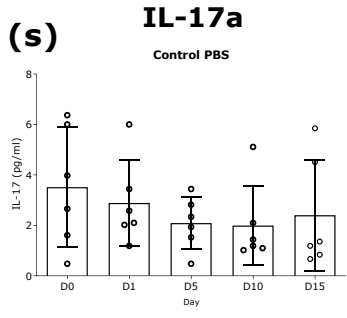


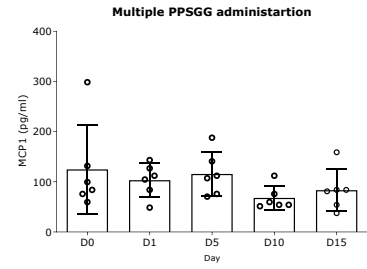
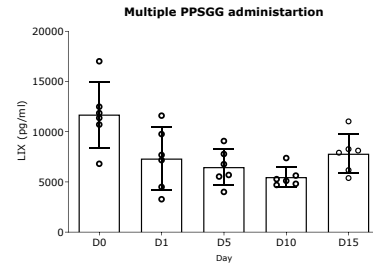
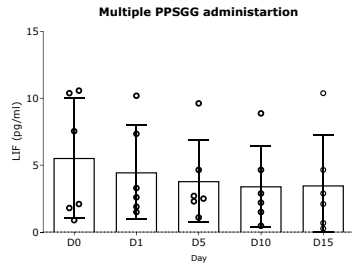
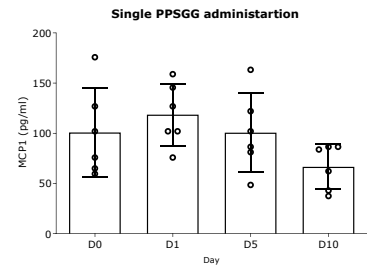
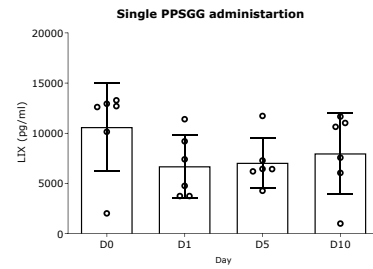
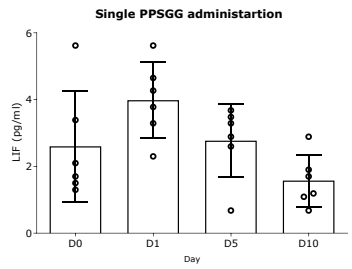
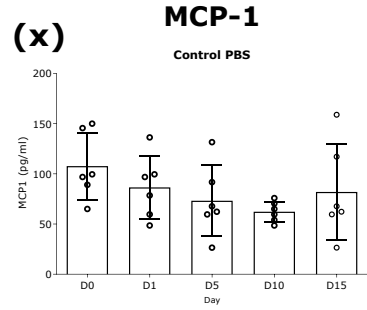
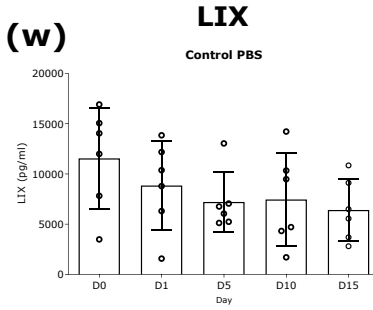
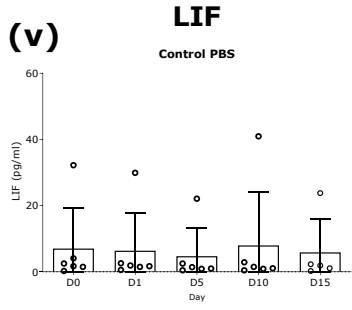


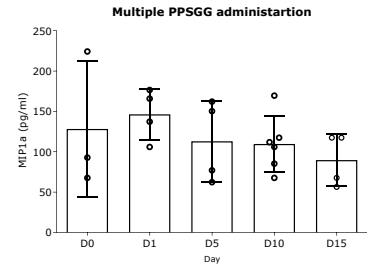
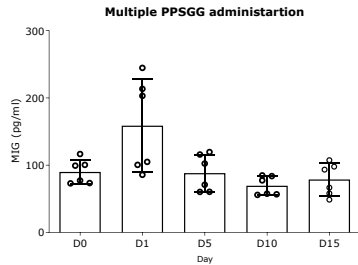
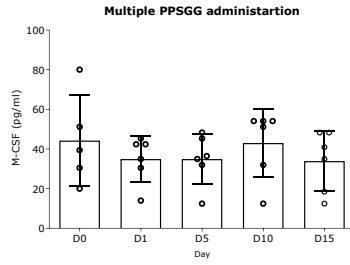
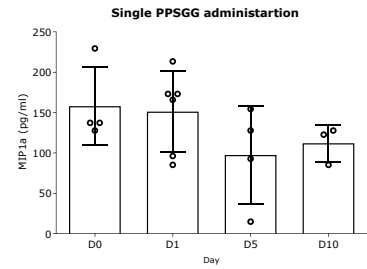
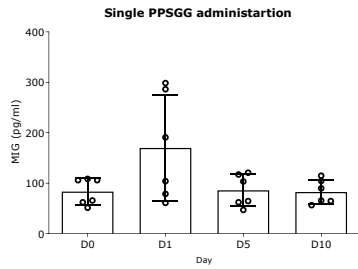
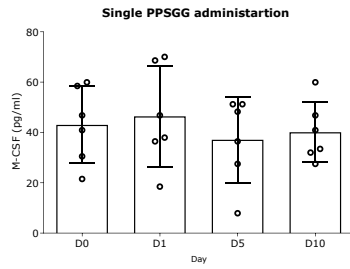
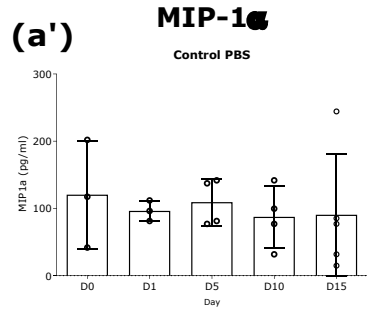
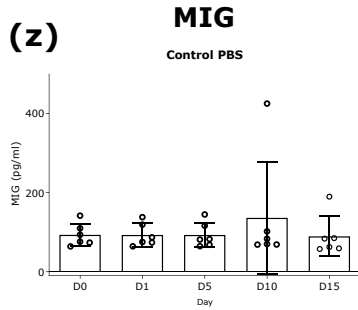
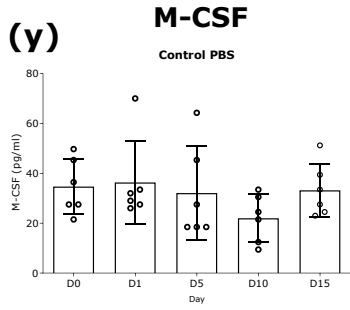


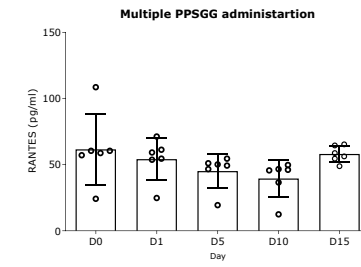
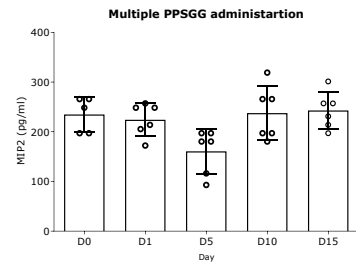
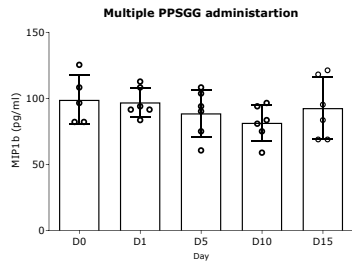
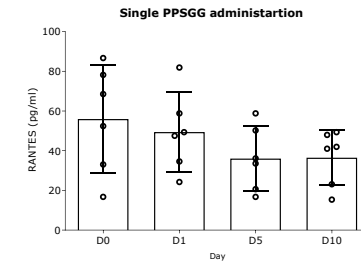
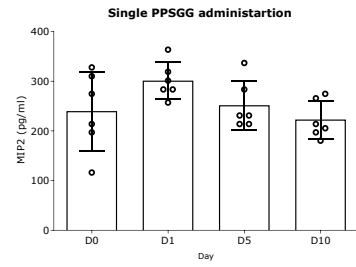
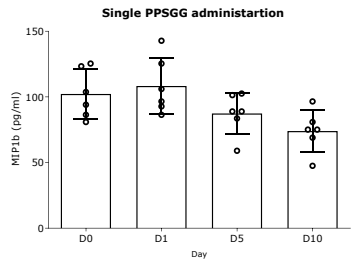
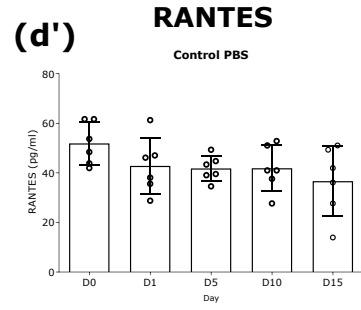
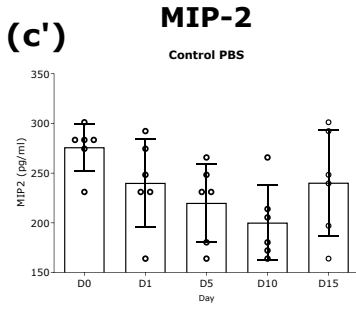
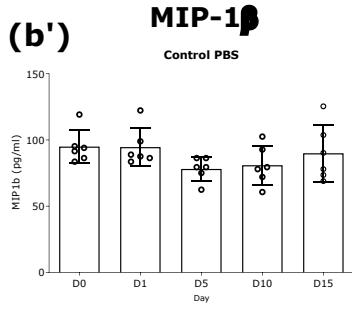


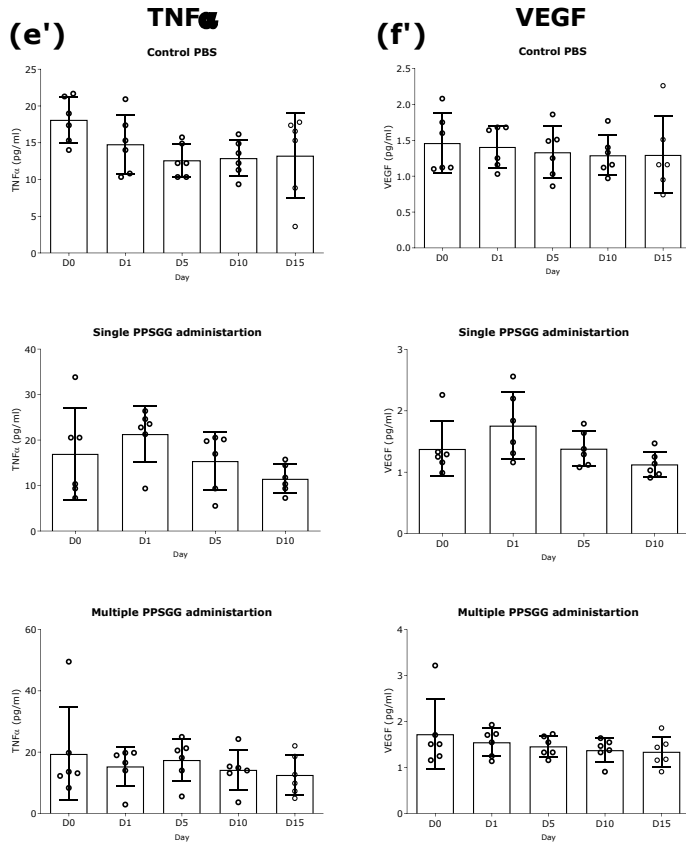






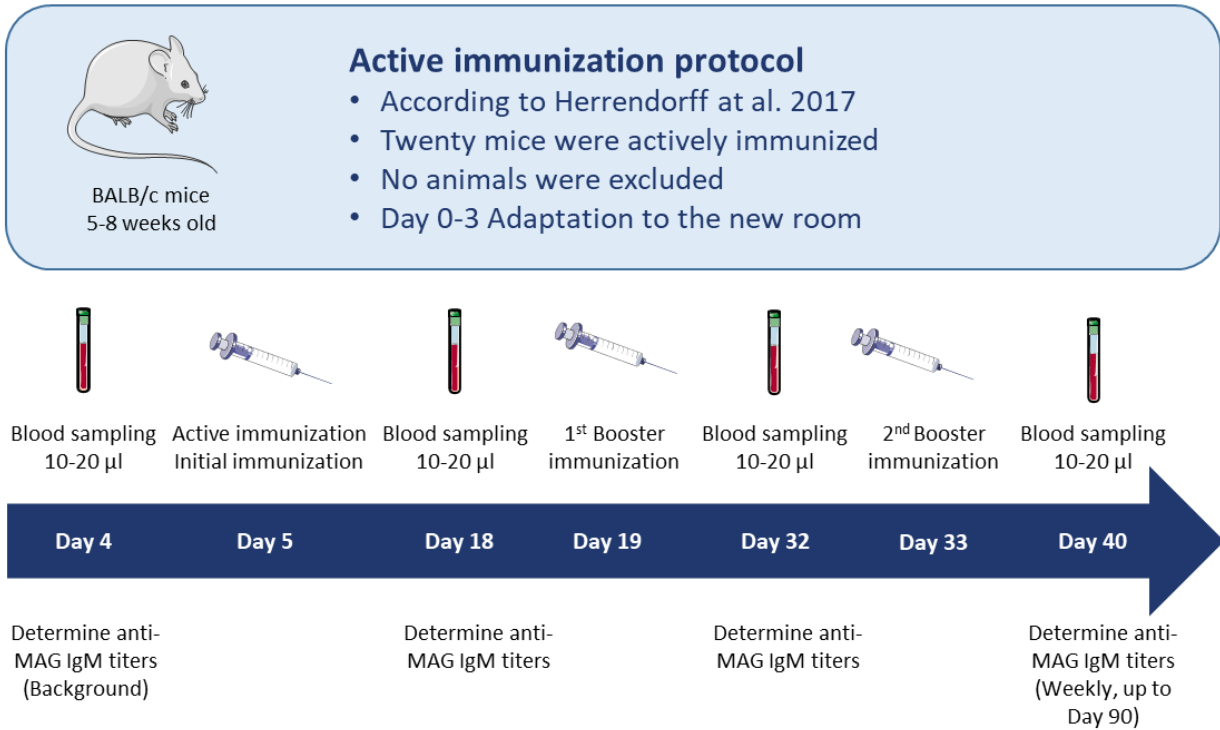




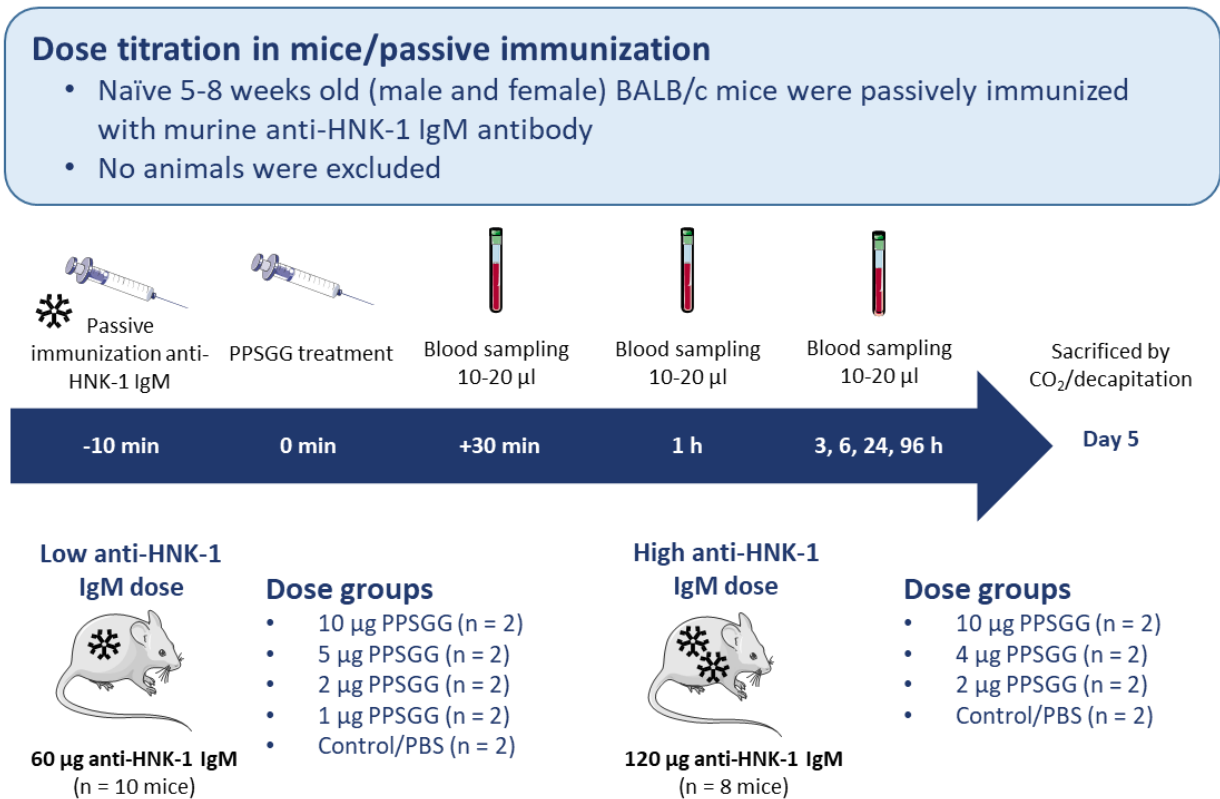


**Supplementary Figure 4. Mouse cytokine and chemokine array after single and multiple PPSGG treatment.** Thirty different cytokines and chemokines Eotaxin (A), G-CSF (B), GM-CSF (C), IFN $\gamma$  (D), IL-1 $\alpha$  (E), IL-1 $\beta$  (F), IL-2 (G), IL-3 (H), IL-4 (I), IL-5 (J), IL-6 (K), IL-7 (L), IL-9 (M), IL-10 (N), IL-12 (p40) (O), IL-12 (p70) (P), IL-13 (Q), IL-15 (R), IL-17a (S), IP-10 (T), KC (U), LIF (V), LIX (W), MCP-1 (X), M-CSF (Y), MIG (Z), MIP-1 $\alpha$  (A'), MIP-1 $\beta$  (B'), MIP-2 (C'), RANTES (D'), TNF $\alpha$  (E'), VEGF (F')) were assessed after single and multiple administration of PPSGG. Mice were injected intravenously with a single dose of PPSGG (10 mg/kg), for five constitutive days with 10 mg/kg PPSGG, or five constitutive days with a corresponding volume of PBS (100  $\mu$ l). Blood samples were taken via the vena saphena prior to initial injection (day 0), 24 h, 5 days, 10 days, or 15 days after the first injection in EDTA coated tubes. After centrifugation at 1000g for 1 min at 4 $^{\circ}$ C, the plasma was collected, diluted 1 in 2 with PBS, and immediately stored at -80 $^{\circ}$ C until analysis.

**(a)**



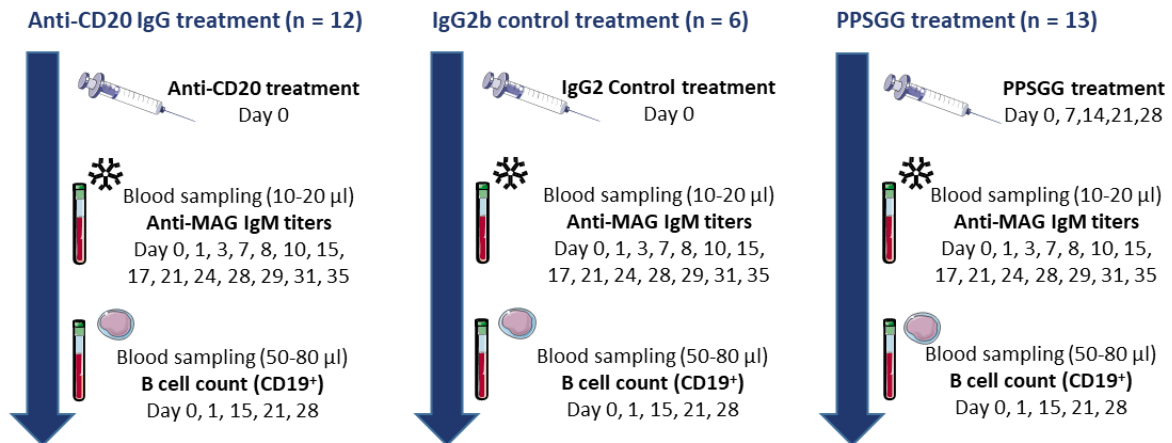
**(b)**



(c)

### CD20<sup>+</sup> cell depletion in mice

- Actively immunized BALB/c mice (n = 31 mice)
- 10 to 14 weeks old (male and female)



Mice were sacrificed by CO<sub>2</sub> suffocation and decapitation after the last blood sampling at day 35

(d)

### Binding of PSGG to murine B cells

- 10 to 14 weeks old (male and female)
- Immunized and non-immunized (naïve) BALB/c mice
- No animals were excluded

Non-immunized mice



Naïve BALB/c mice  
(n = 6 mice)

Immunized mice



❄️ Anti-MAG/HNK-1 IgM  
(n = 6 mice)

Day 0

Mice were sacrificed to isolate the spleen

Murine spleen



1 h

Isolation and analysis of B cells from spleen

Murine B cells





**Supplementary Figure 5. Flowcharts of the mouse experiment timelines.** The flow charts depict the active immunization protocol of Balb/c mice (**a**), the passive immunization and dose titration study design (**b**), the CD20<sup>+</sup> depletion experiment (**c**), and the PPSGG binding study (**d**). Images adapted from SMART Servier Medical ART (Retrieved from <https://smart.servier.com/>, January 2020).