

Fig S1

A.

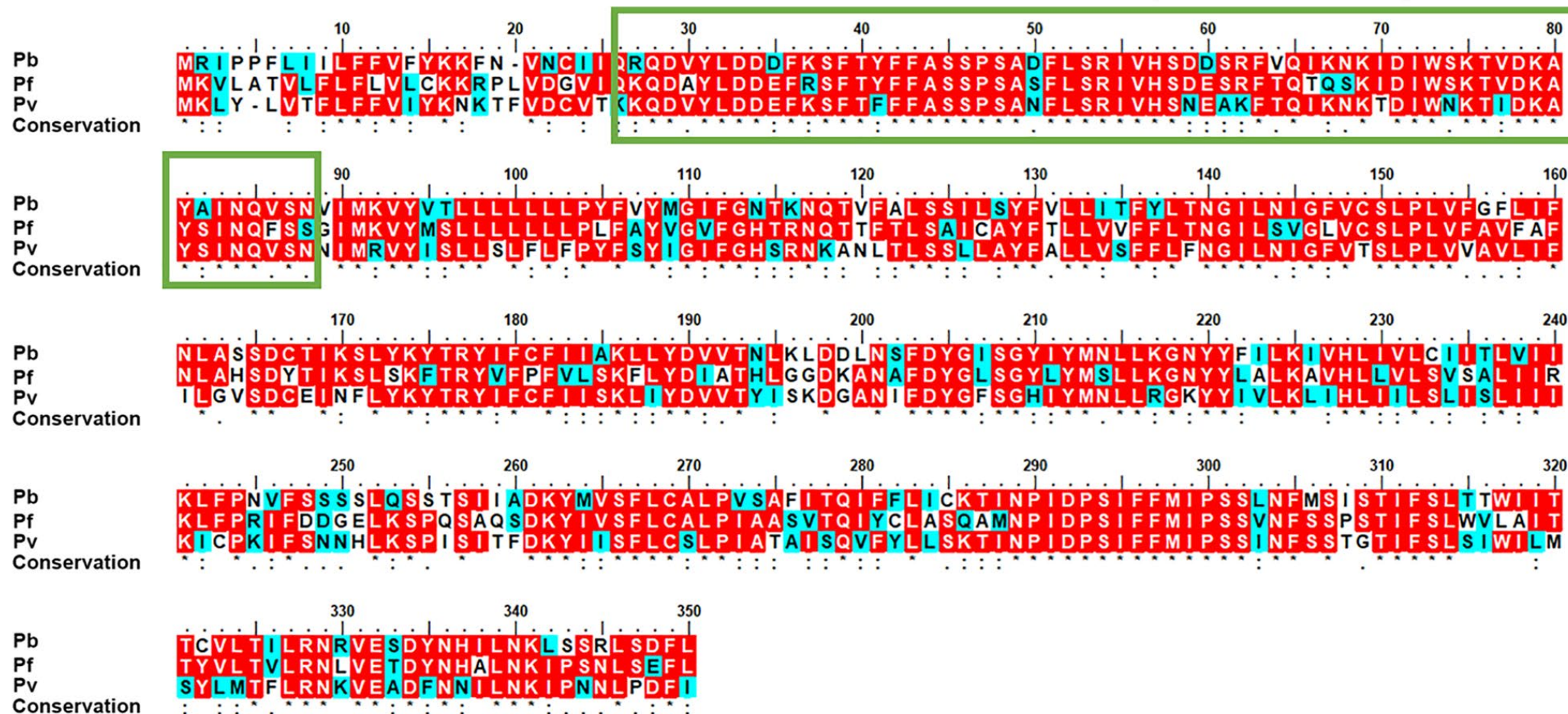
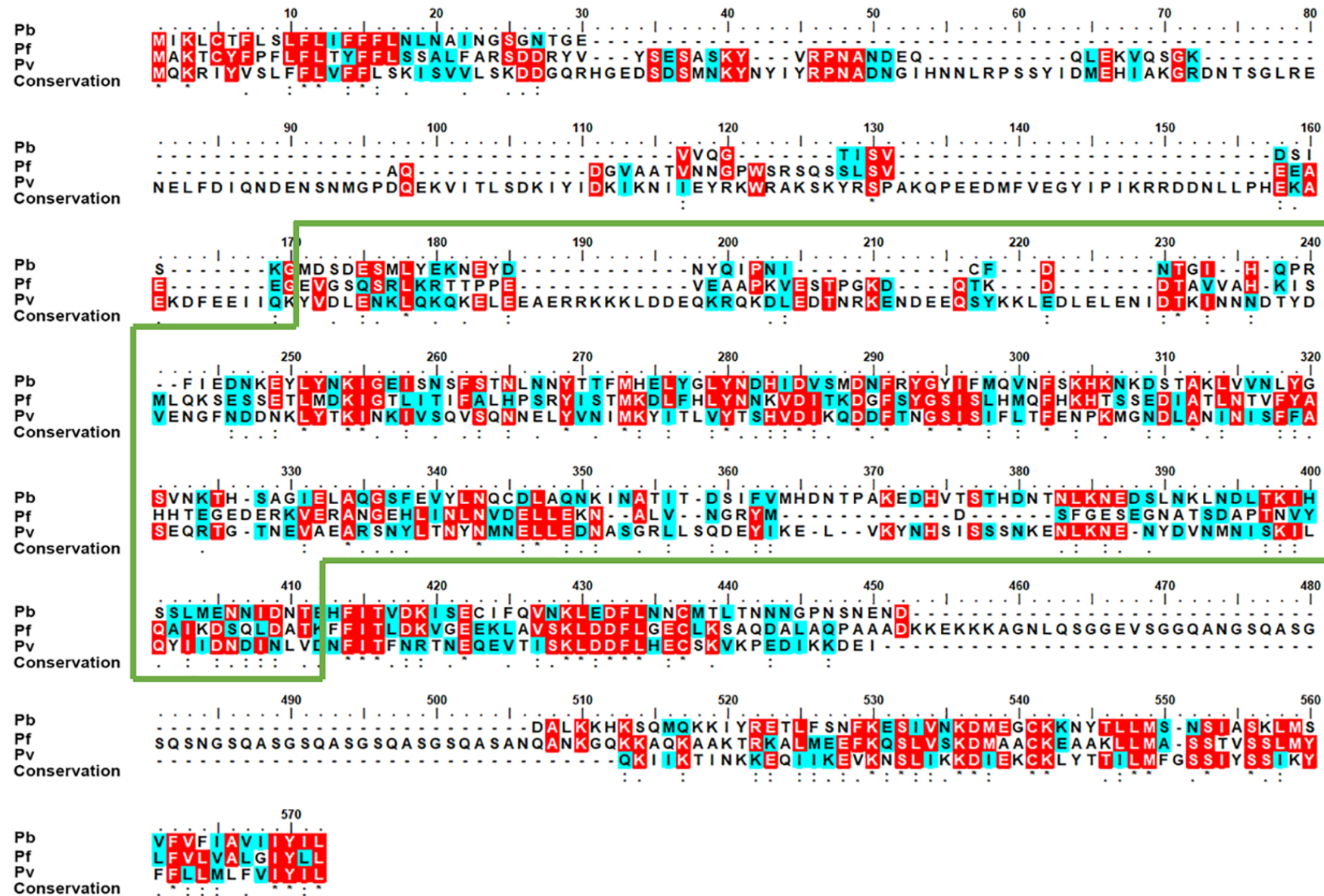
E. coli expression region

Fig S1**B.**

E. coli
expression
region

Fig. S1. Sequence analysis of Pbg37 and PSOP25. Alignment of Pbg37 (A) and PSOP25 (B) proteins in *P. berghei* (Pb), *P. falciparum* (Pf) and *P. vivax* (Pv). Amino acids conserved across three species are marked in red for identical and blue for similar residues. The fragments (Pbg37: 26-88 aa, PSOP25: 45-245 aa) expressed in *E. coli* were indicated.

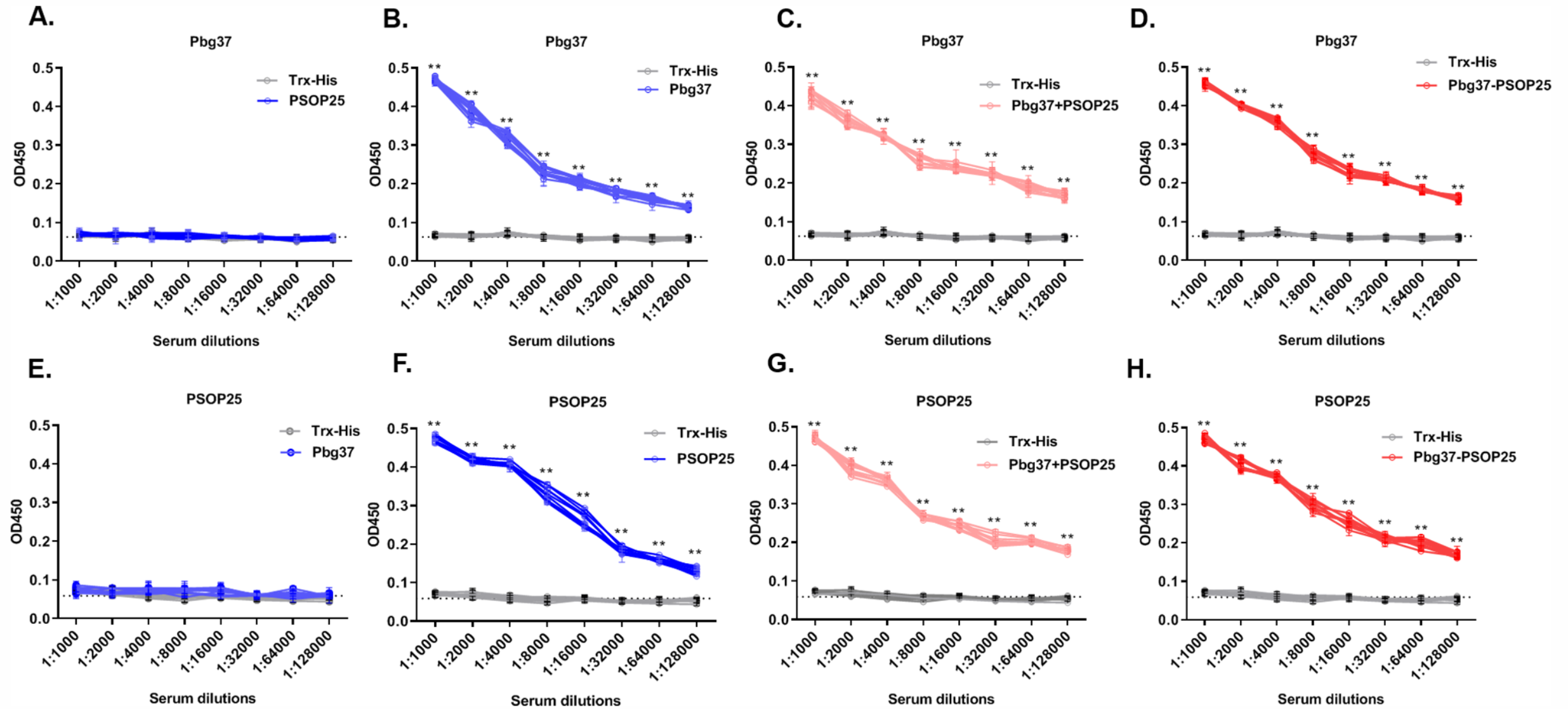
Fig S2

Fig. S2. Antibody titers in individual mouse. Antibody titers against Pbg37 or PSOP25 in individual mice were tested by ELISA. The 96-well plates were coated with purified Pbg37 (A-D) or PSOP25 (E-H) recombinant proteins after the removal of the Trx tag. The serum of each mouse in the PSOP25 (A, F), Pbg37 (B, E), Pbg37+PSOP25 (C, G), Pbg37-PSOP25 (D, H) groups collected at day 10 after the final immunization was evaluated by ELISA separately. ** $P < 0.01$ represents the difference between the recombinant protein immunization groups with Trx-His control group.

Fig S3

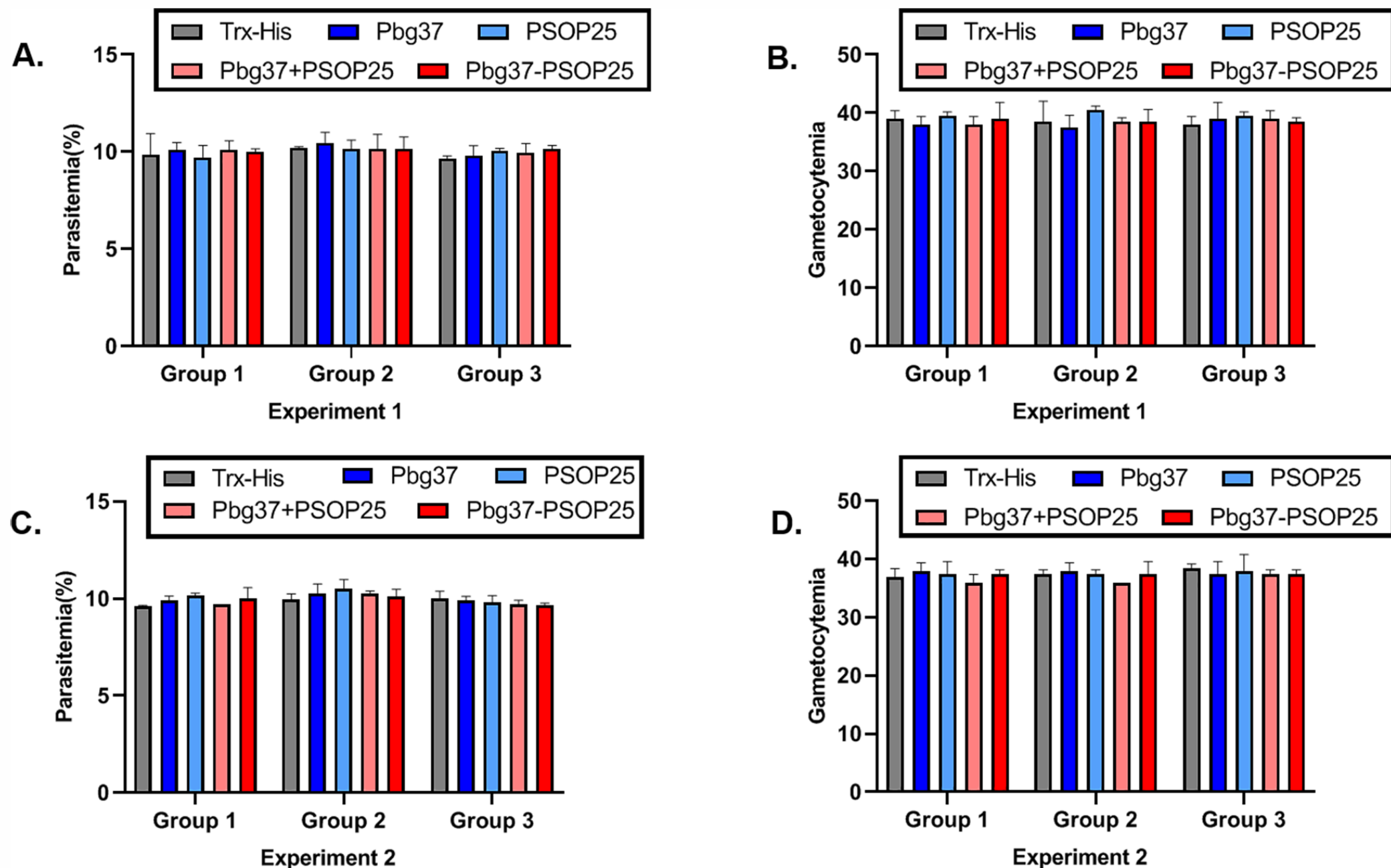
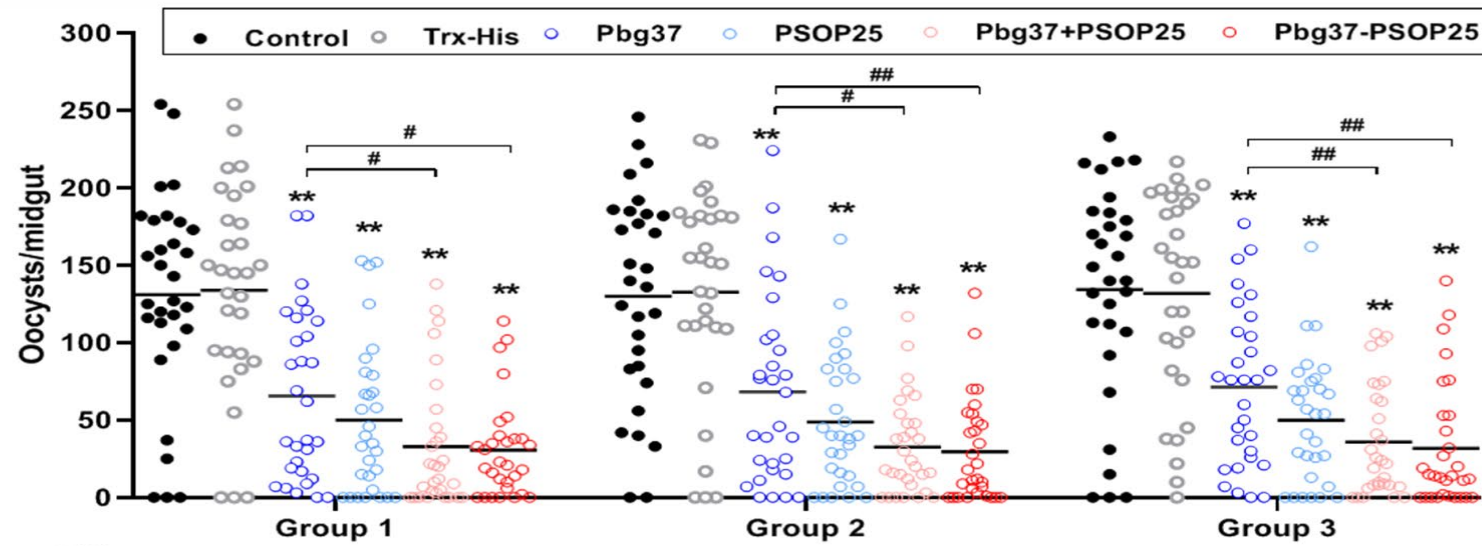


Fig. S3. The parasitemias and gametocytemias of individual immunized mice used in the two DFA experiments. BALB/c mice immunized with respective recombinant proteins were infected with *P. berghei* parasites. The parasitemias and gametocytemias of individual mice were measured in Experiment 1 (A, B) and Experiment 2 (C, D).

Fig S4

Experiment 1



Experiment 2

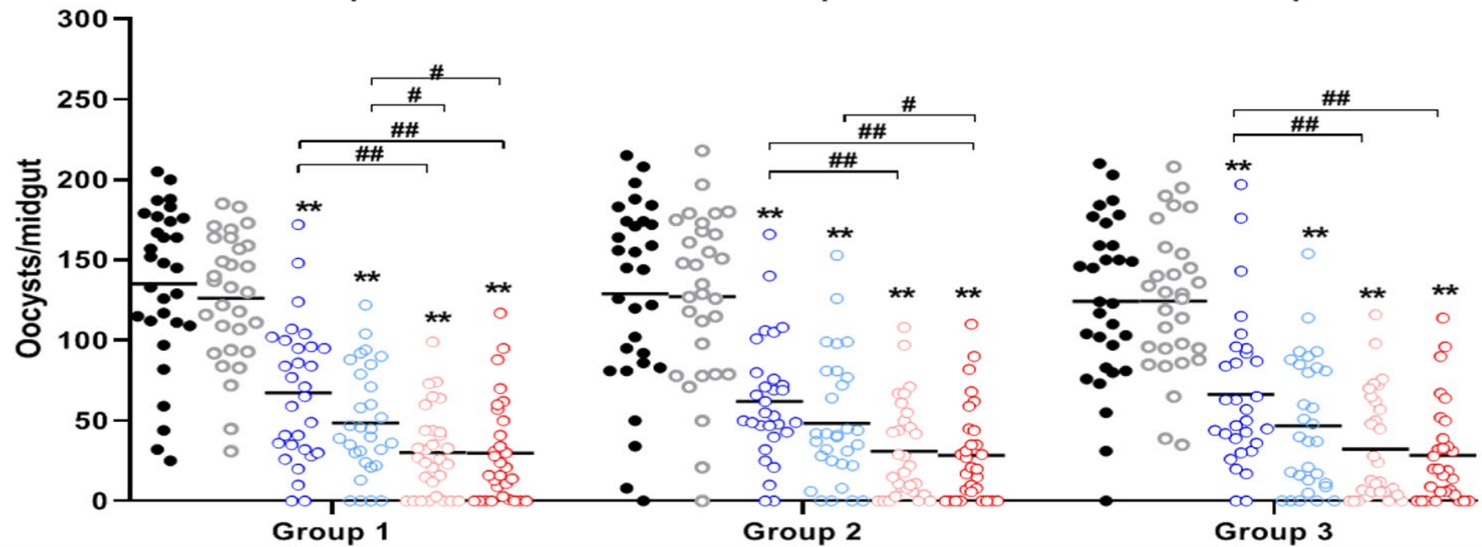


Fig. S4. Transmission-reducing potential of antisera in vivo. BALB/c mice immunized with respective recombinant proteins was infected with *P. berghei* parasites 10 days after the third immunization. Mosquitoes were allowed to feed on the infected mice after 3 days. Data points represent oocyst numbers in individual mosquitoes 12 days post blood meal. Horizontal bars indicate the mean number of oocysts per midgut from mosquitoes fed on each mouse (n = 30). Group 1-3 represent three different biological replicates in two separate experiments, respectively. *P < 0.05 and **P < 0.01 represents the difference between the recombinant protein immunization groups with Trx-His control group. #P < 0.05 and ##P < 0.01 represents the difference among the different recombinant protein immunization groups (Mann-Whitney U test).