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Comparison of the immune responses of crossbred line of mice selected for two different immunities

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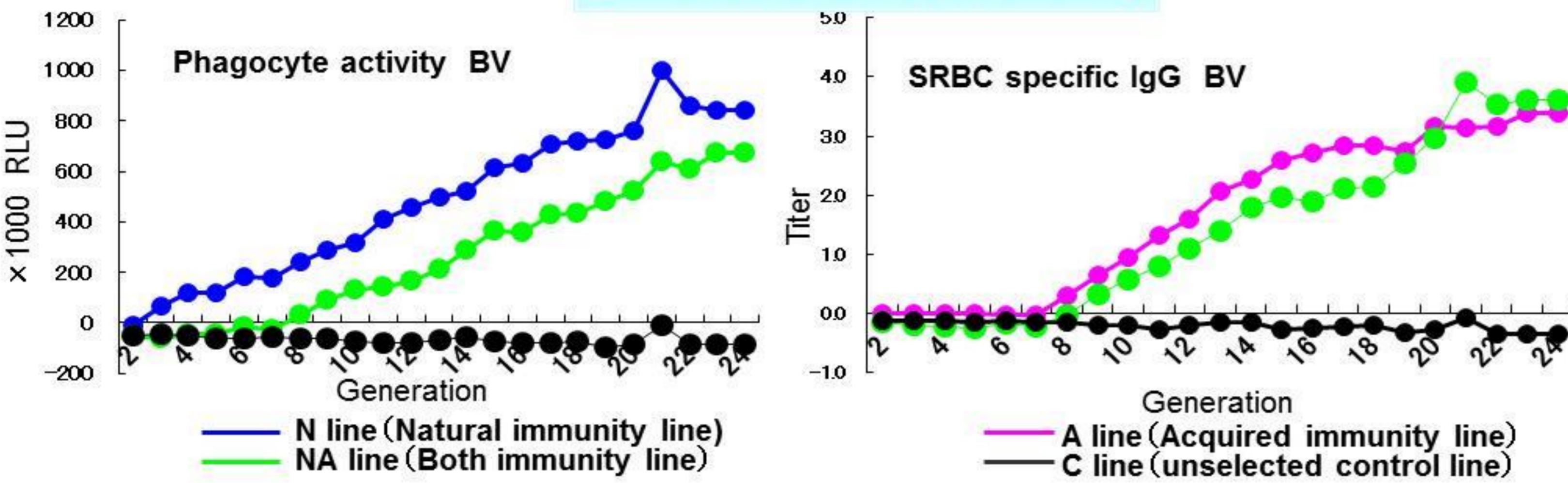
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INTRODUCTION

Previously, we selected for high phagocyte activity (PA), high SRBC specific antibody production (ABP) and both high PA and ABP peripheral blood immunity of the mice, and they were named N line, A line, and NA line, respectively. In present study, we compared the immune response to sheep red blood cell (SRBC) vaccinations among the crossbred and pure bred lines.

MATERIALS AND METHODS

Genetic trends on immunity



Number of experimental animals

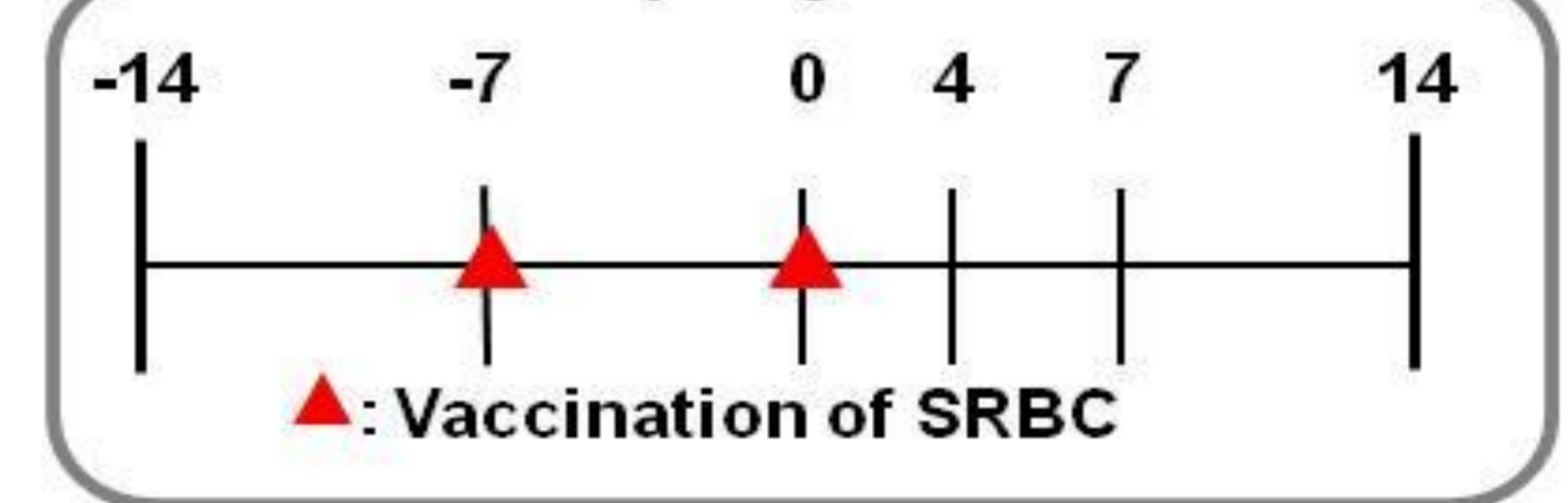
Line	♂	♀	Total
N	6	6	12
A	6	6	12
NA	6	6	12
C	6	6	12
F1[N ♀ × A ♂]	6	6	12
F1[A ♀ × N ♂]	6	6	12
Total	36	36	72

(Base population of selection is constructed with 4 inbred lines (C57BL/6, BALB/c, C3H/He, DBA/2))

Immune traits measurement

Immune traits	Method
• White blood cell number (WBC)	Auto hemolytic counter
• Phagocyte activity	Chemiluminescence method
• CD4 ⁺ and CD8 ⁺ expression in T cells	FACS Caliber flowcytometer
• Non-specific IgG, IgM, IgA	Enzyme-linked immunosorbent assay

Blood sampling schedule



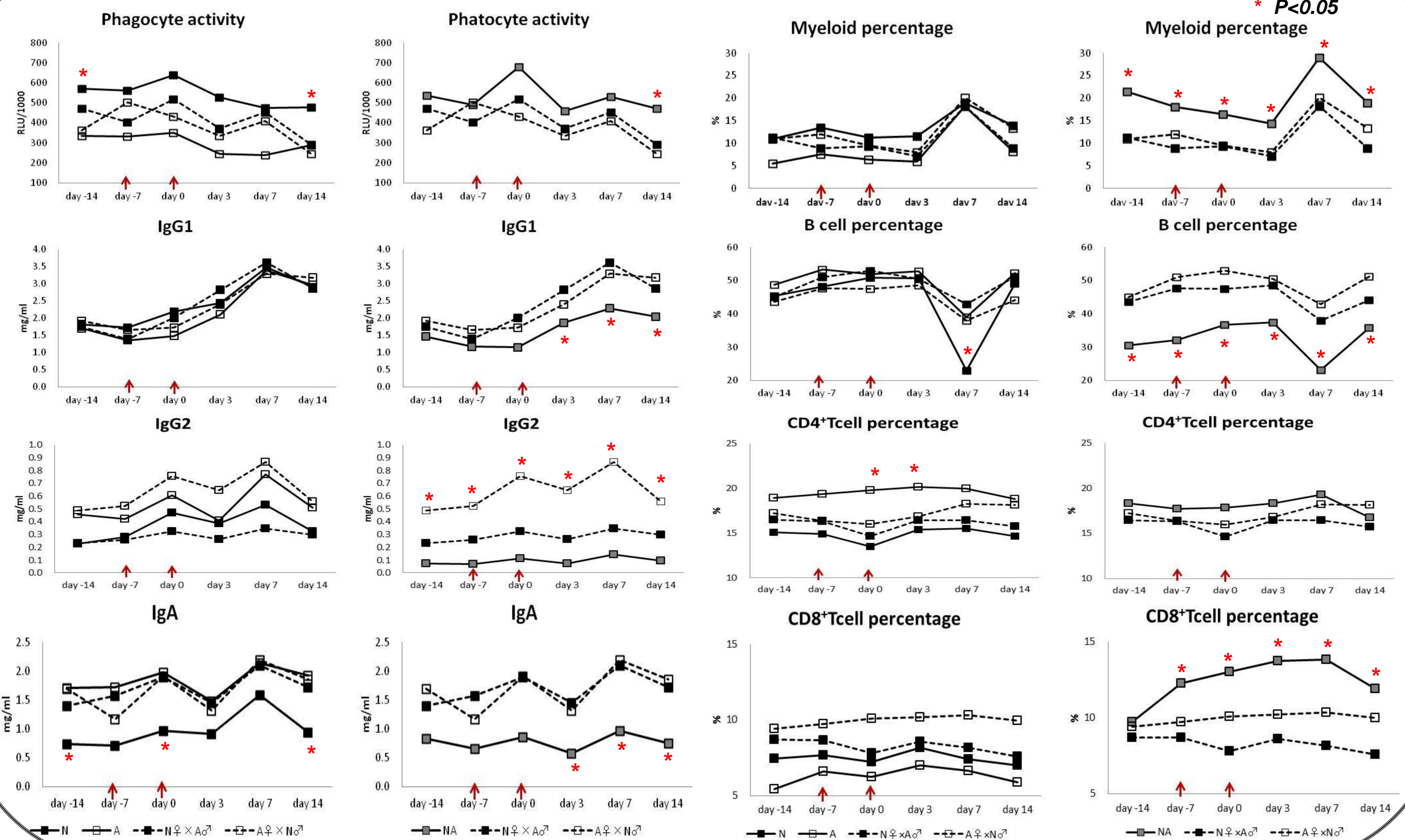
RESULTS

Comparison pureline vs crossbred

Comparison NA line vs crossbred

Comparison pureline vs crossbred

Comparison NA line vs crossbred



- 1. Comparison purebred vs crossbred:** Intermediate value of parent line in many traits (Phagocyte activity, myeloid, B cell and CD4⁺ T cell percentage), and dominant effect in IgA and over dominance effect in CD8⁺T cell percentage were confirmed.
- 2. Comparison (NA) vs crossbred:** NA line was different from crossbred line in many traits: High phagocyte activity, and high myeloid and CD8⁺Tcell percentage, and low IgG1, IgG2, IgA, B cell percentage than crossbred lines.
- 3.** These results show that the multi-trait selected line (NA line) has the immunity biased to the natural immunity.

CONCLUSIONS

The crossbred lines show a balanced immune response compared with multi-traits selected line (NA). Further research is necessary to compare the resistance of these crossbred line or NA line to the pathogen infection.