



Changes in peripheral blood leukocytes in swine selected line for resistance to MPS

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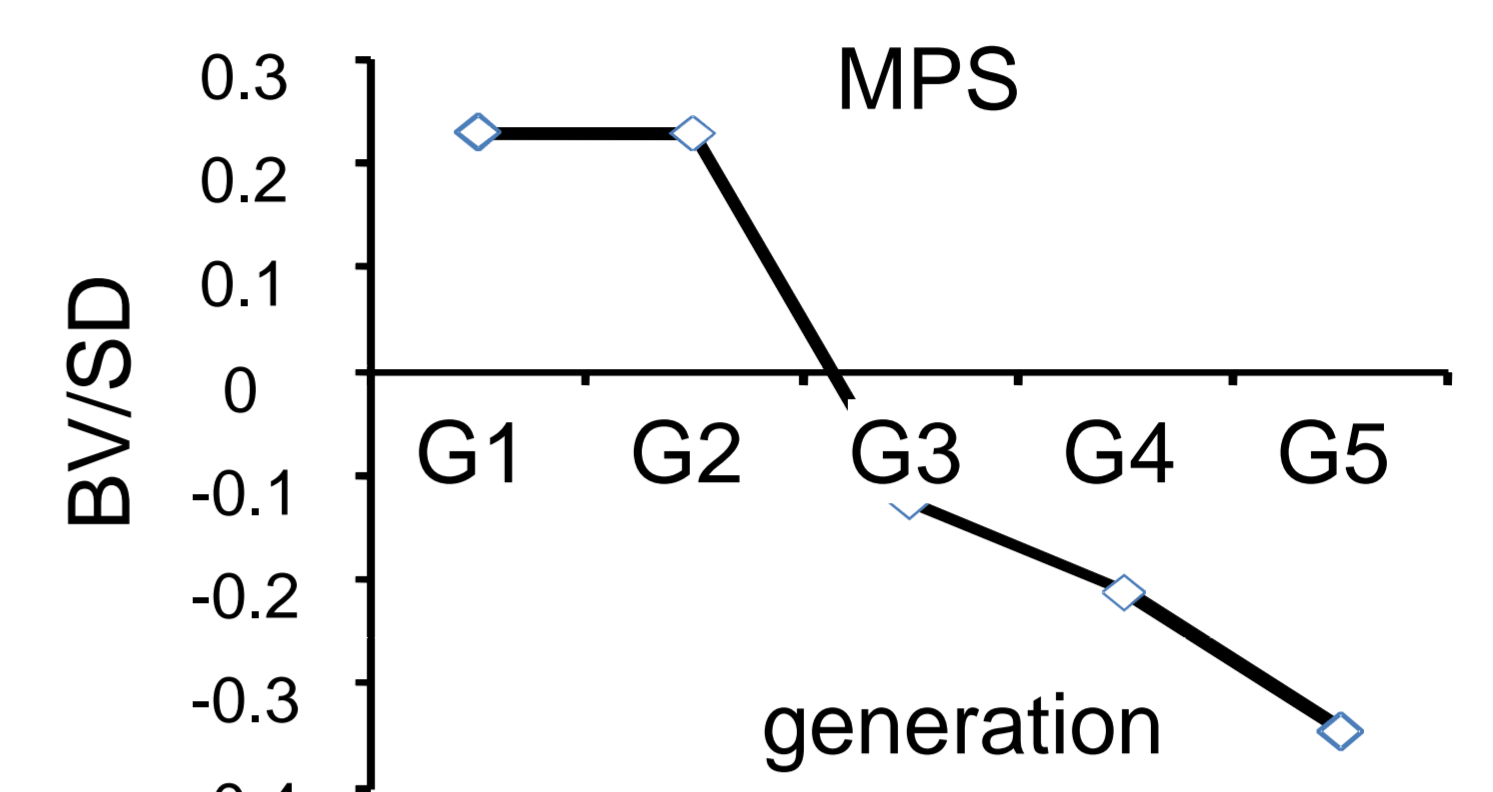
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Introduction

Mycoplasma hyopneumonia of swine (MPS), a highly prevalent chronic respiratory disease, is known to cause significant economic losses in the swine industry. One approach to reduce the risk of MPS is genetic improvement. Recently, we created the Landrace line (Miyagino L2), which was genetically selected at the Miyagi Prefecture Animal Industry Experiment Station on the basis of reduced incidence of pulmonary MPS lesions and increased meat production for 5 generations [1].

In this study, we characterized the immunophenotype of a novel Landrace line genetically selected to reduce the incidence of pulmonary lesions caused by MPS.

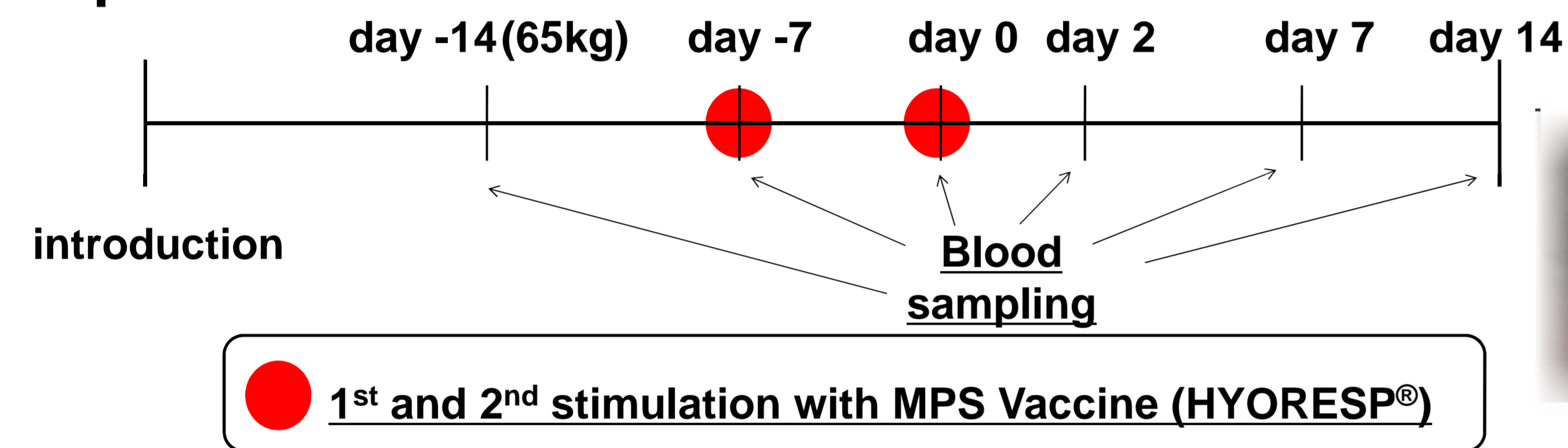


Ref [1]. H. Kadowaki *et al.*, *Livestock Science*, 2012

Materials & Methods

Pigs: MPS selected and control (non-immune selected) Landrace line (12 each)

Experimental schedule:



Immune traits measurements of blood cells:

- whole blood cell count (autohemolytic counter)
- cell population analysis (Flow cytometry)
- mitogenic activity (thymidine incorporation)
- TLR2 and 4 mRNA analysis (real-time qPCR)

Statistical analysis:

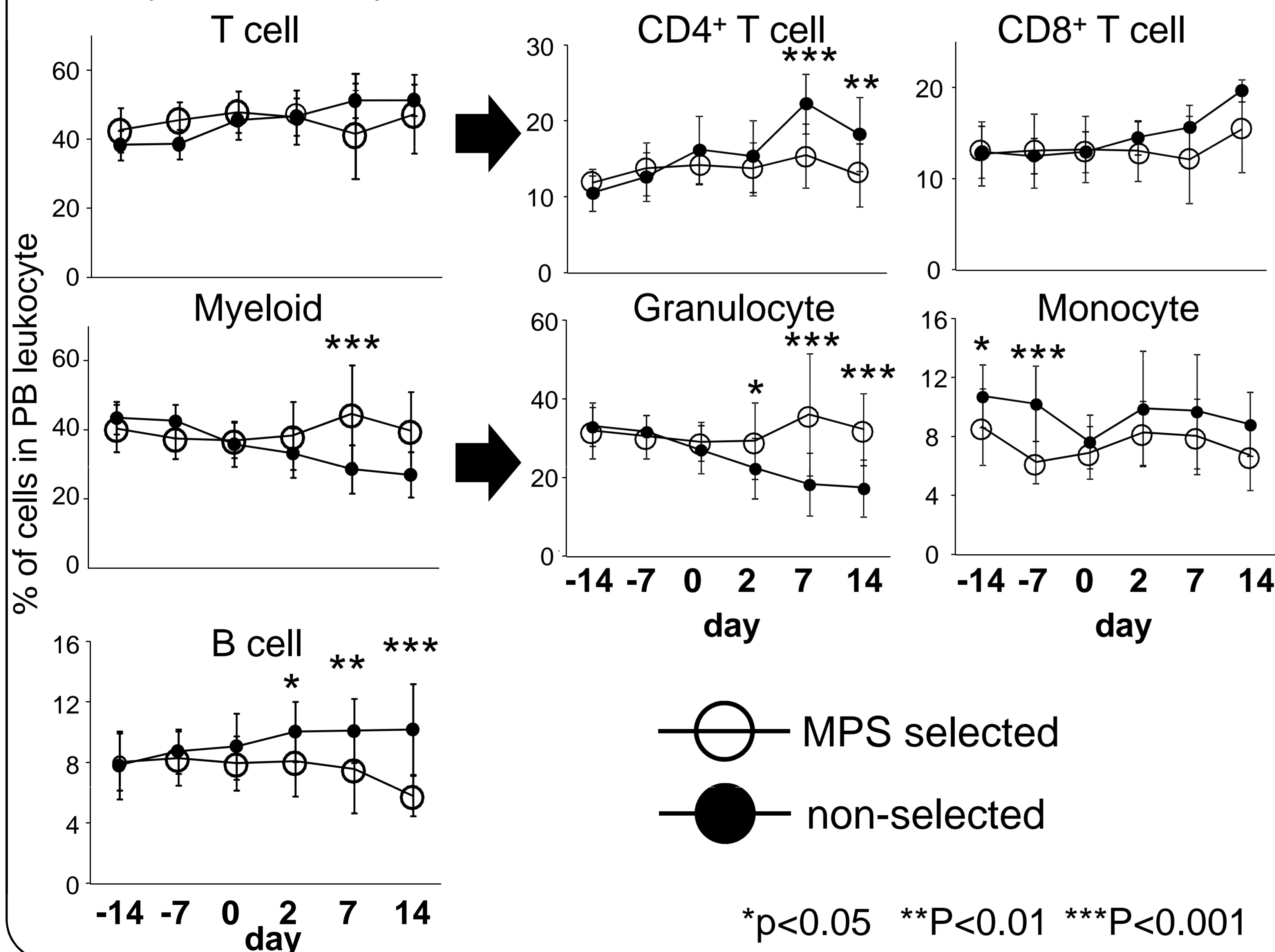
SAS Mixed procedure [fixed effect; line and day]
random effect; animals

Results

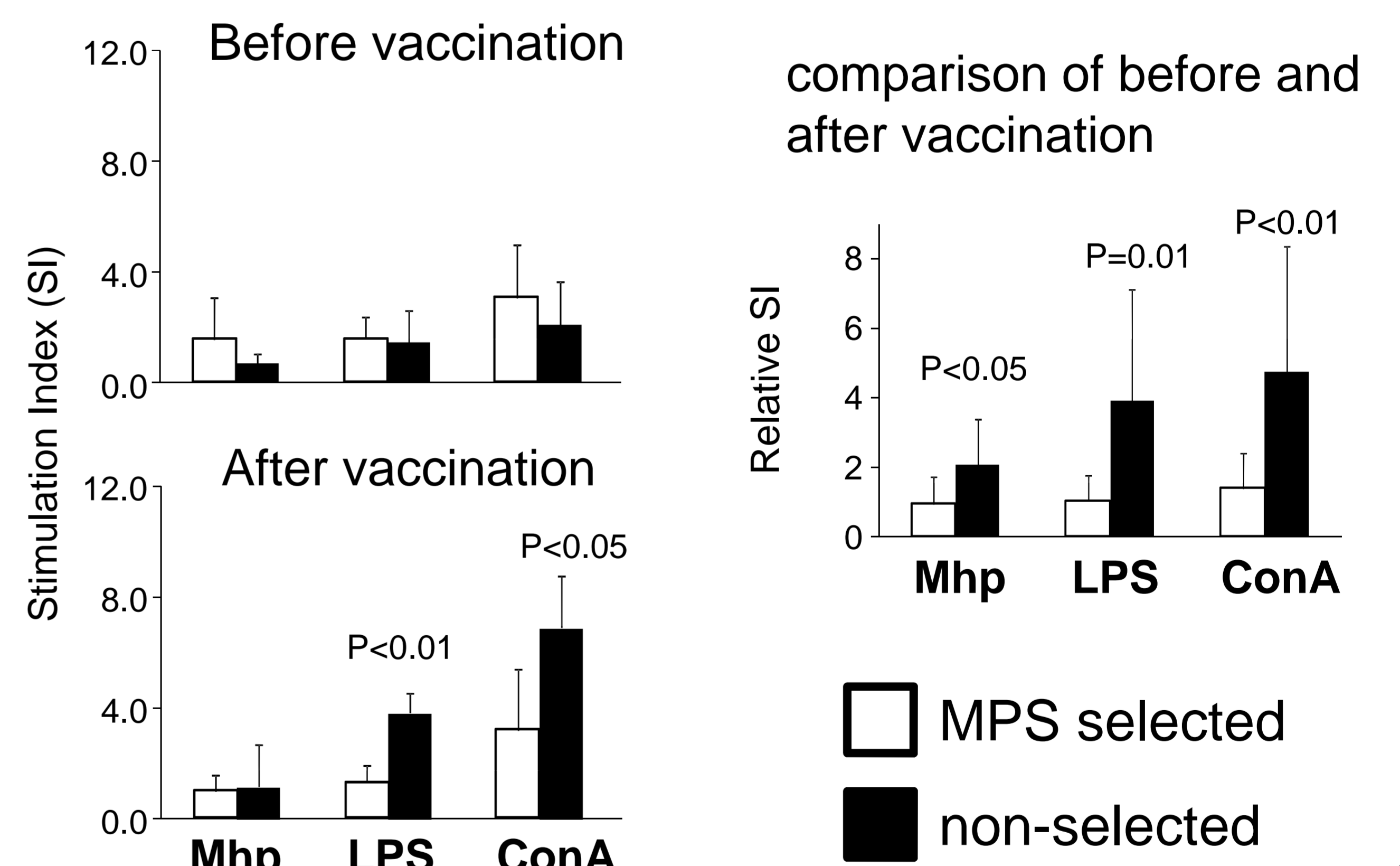
1. Changes in the whole blood cell count from day -14 to day 14

analyzed blood cells	Line	total Leukocyte in PB (10 ² cells/ μ l)					
		day -14	day -7	day 0	day 2	day 7	day 14
WBC	non-selected	220.0 \pm 48.8	186.6 \pm 41.2***	189.1 \pm 33.8**	220.8 \pm 46.6	197.5 \pm 61.1	192.7 \pm 34.7***
	MPS-selected	225.8 \pm 28.4	255.3 \pm 31.7	234.0 \pm 22.6	242.4 \pm 43.5	212.3 \pm 35.8	245.2 \pm 34.9

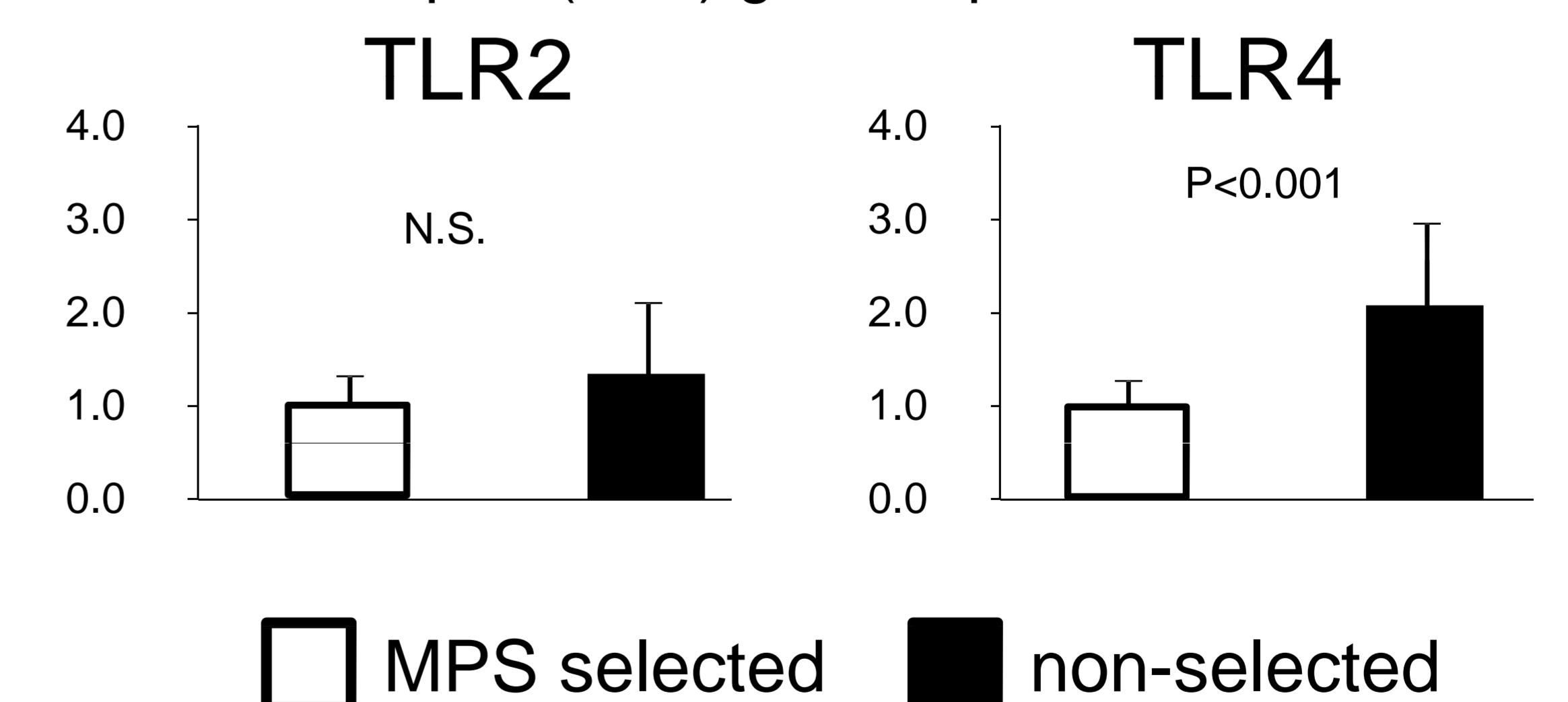
2. Analysis of leukocyte subsets



3. Proliferative ability of Peripheral blood mononuclear cells in vitro



4. Toll-like receptor (TLR) gene expression in blood cells



Conclusions

- MPS selected line preferentially expanded myeloid cells, especially granulocyte, after stimulation with MPS vaccine.
- Meanwhile, control line expanded lymphocytes after stimulation.
- Higher proliferative ability of blood lymphocytes in control line in vitro may explain the increase of lymphocyte % in vivo.
- However, TLR2 expression level was not different, indicating that Mhp recognition step may not be involved for MPS resistance in selected line.

