

THE ROLE OF P-SELECTIN GLYCOPROTEIN LIGAND-1 (PSGL-1) DURING G-CSF TREATMENT IN A MOUSE MODEL

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Introduction

The selectin-family:

- L-selectin: leukocytes (constitutive)
- E-selectin: activated endothelial cell
- P-selectin: activated platelets and endothelial cells

Counter receptor: **PSGL-1**

Purpose of the study

To study the effect of G-CSF in the absence of PSGL-1

Materials and methods

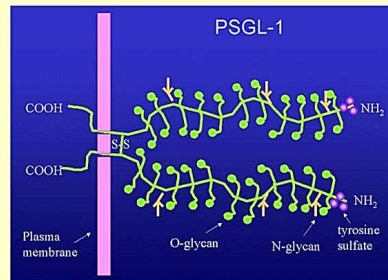
- 12-16 week old WT and PSGL-1 KO mice
- Retroorbital blood sampling in ACD-anticoagulated tubes
- Basic blood count determination
- Cytopenia induction (cyclophosphamide: Endoxan, Baxter)
- Leukocyte mobilization (G-CSF: Neupogen, Amgen)
- Leukocyte absolute count determination (Siemens, ADVIA-120)
- Leukocyte subset determination in blood film
- CD 117⁺ cell analysis (BD FACSCalibur)



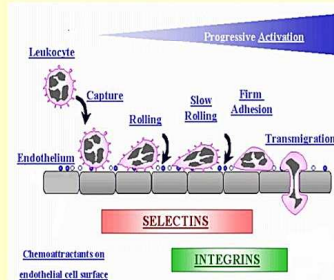
Experimental setting

- measuring basic blood count
- induction of cytopenia (n=19)
- investigation of leukocyte elimination (n=4)
- injection of G-CSF (n=15) during 4 days (twice a day)
- determination of the maximal leukocyte number (after the last G-CSF injection)
- determination of cell count four days after the last G-CSF treatment

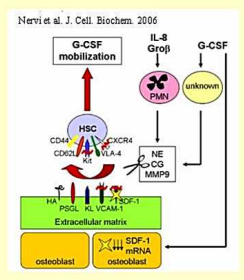
PSGL-1 structure



Role in peripheral blood



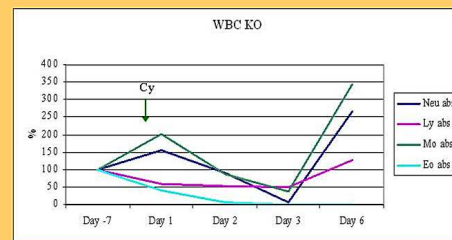
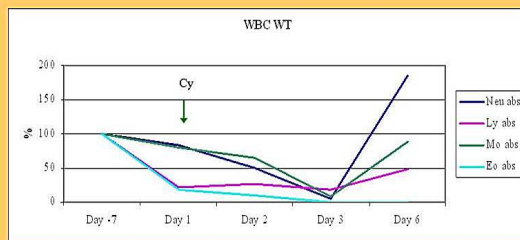
Role in bone marrow



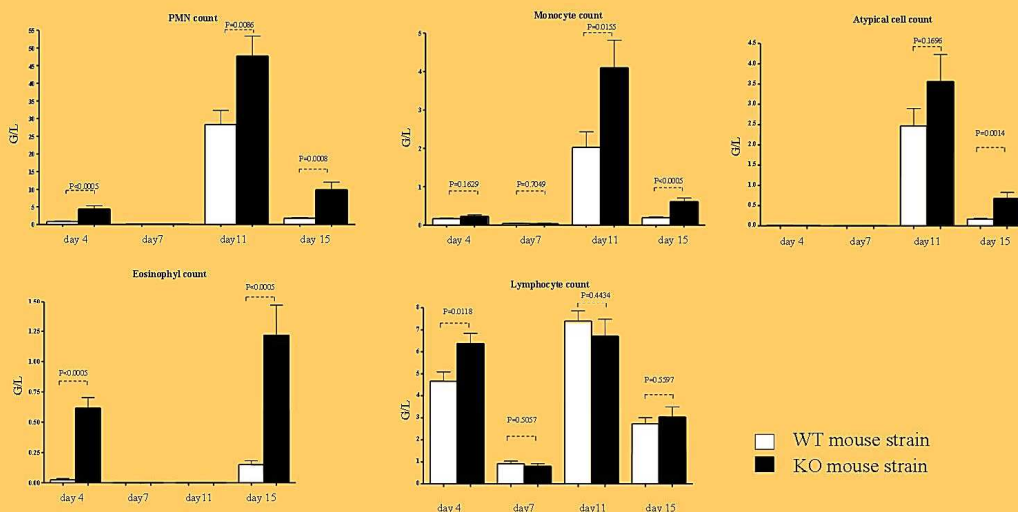
HSC: Hematopoietic stem cell

Results

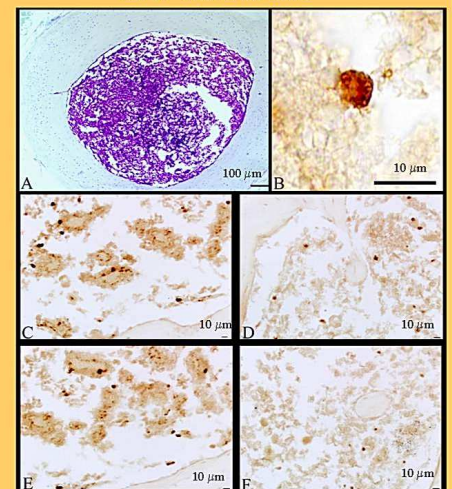
Investigation of leukocyte elimination (n=4)



Assisted leukocyte mobilization with G-CSF (n=15)



CD 34⁺ cells in the femur



CD 34⁺ cells in the mouse femur bone cross section at small magnification (A), enlarged (B), untreated WT (C) and KO (D) animals. 7 days after cyclophosphamide treatment in WT (E) and KO (F) animals.

Conclusions

The lack of PSGL-1 results in higher myeloid cell counts after G-CSF treatment with prolonged effects on eosinophils. The differences are most probably caused by faster mobilization from the bone marrow and delayed extravasation in the peripheral vessels.