Role of CD43 in erythroid differentiation

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INTRODUCTION

Erythrocytes are essential cells for oxygen transportation. In humans, erythrocytes are characterized by lacking nucleus when completely differentiated.

Erythropoiesis is the process by which percussors of erythrocytes (erythroblasts) get differentiated, loosing their nuclei. In order to do that, erythroblastic islands (EBI) are formed, consisting in a central macrophage and surrounding erythroblasts.

	ProE	BasoE	PolyE	OrthoE	Retic	RBC
Ter119	low	+	++	+++	hi	hi
CD71	hi	+	+	Low	low	-
CD44	hi	++	+	Low	low	-
DAPI	hi	+++	++	+	-	-

Fig 1. Diverse stages in erythroid differentiation and the corresponding expression of markers.

This process primarily takes place in the bone marrow (BM), where several factors are essential for its proper functioning. In cases of inefficient erythropoiesis in BM, extramedullar erythropoiesis can occur in spleen.

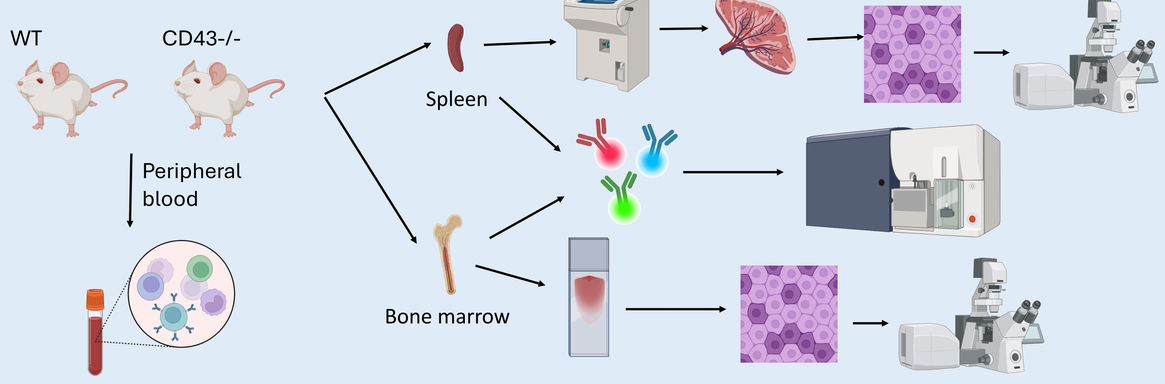
CD43 sialomucin is a transmembrane glycoprotein expressed in the different stages of erythroid differentiation. Jian Bai and cols[1], demonstrated that the interaction between CD169 and CD43 promotes erythroid differentiation in the BM.

According with this, CD43 may have an important role in erythroid differentiation, having an impact in the proportions of erythoblasts and erythoblasts in bone marrow, spleen and peripheral blood.

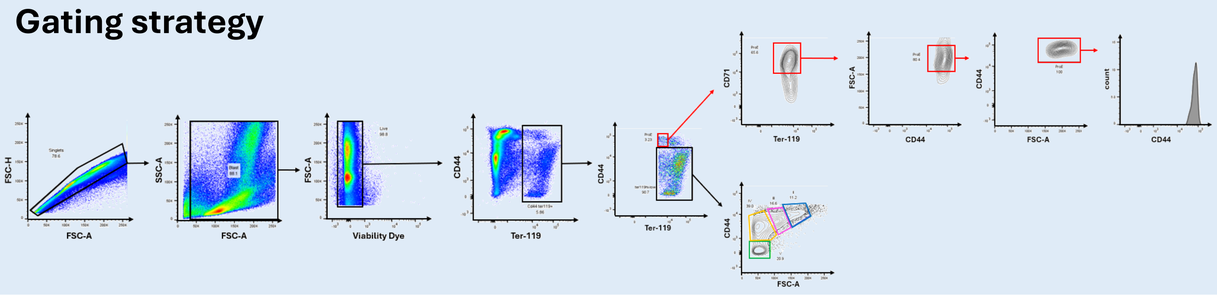
OBJECTIVES

- Observe the participation of CD43 in EBIs composition and structure in bone marrow and spleen.
- Analyze the effects of CD43 in peripheral blood components.
- Quantify proportions of different stages of erythroid cells present in bone marrow and spleen.

METHODS



Gating strategy



RESULTS

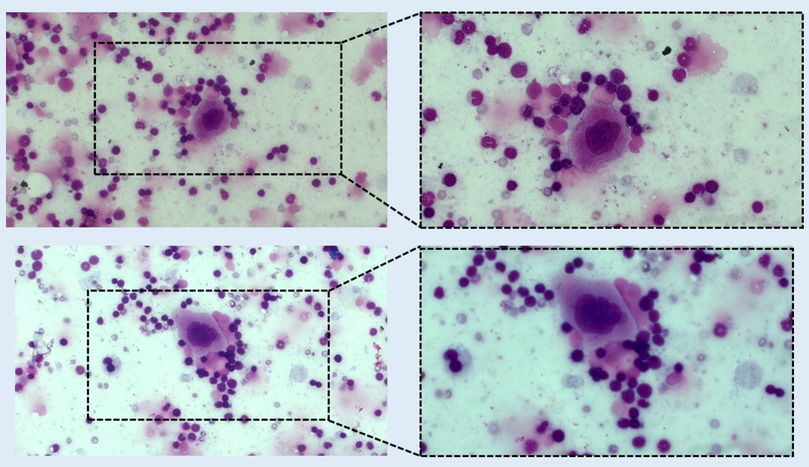
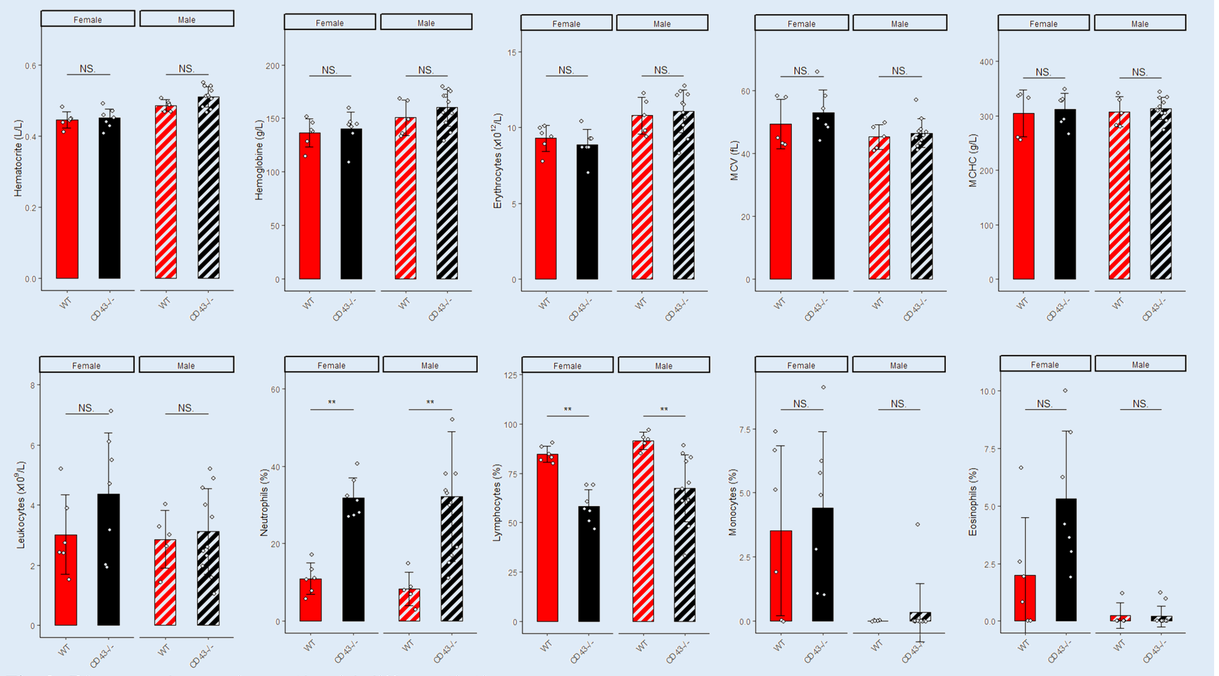


Fig 1. Diverse phases in erythroid differentiation.



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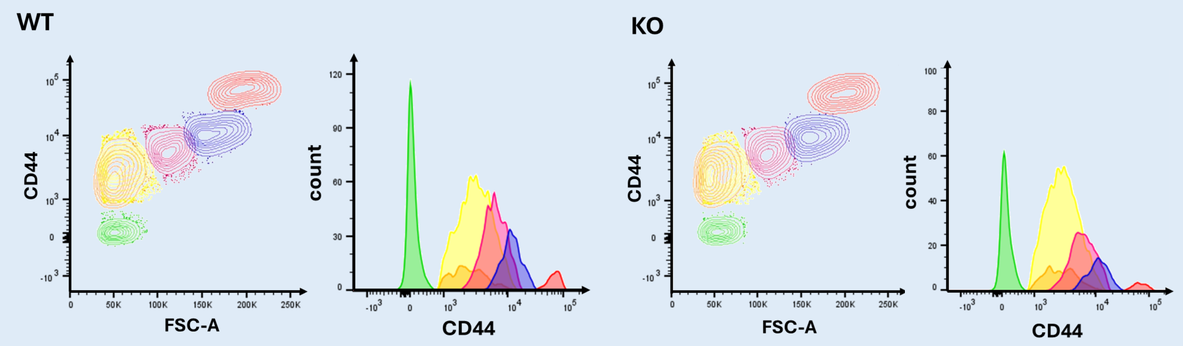

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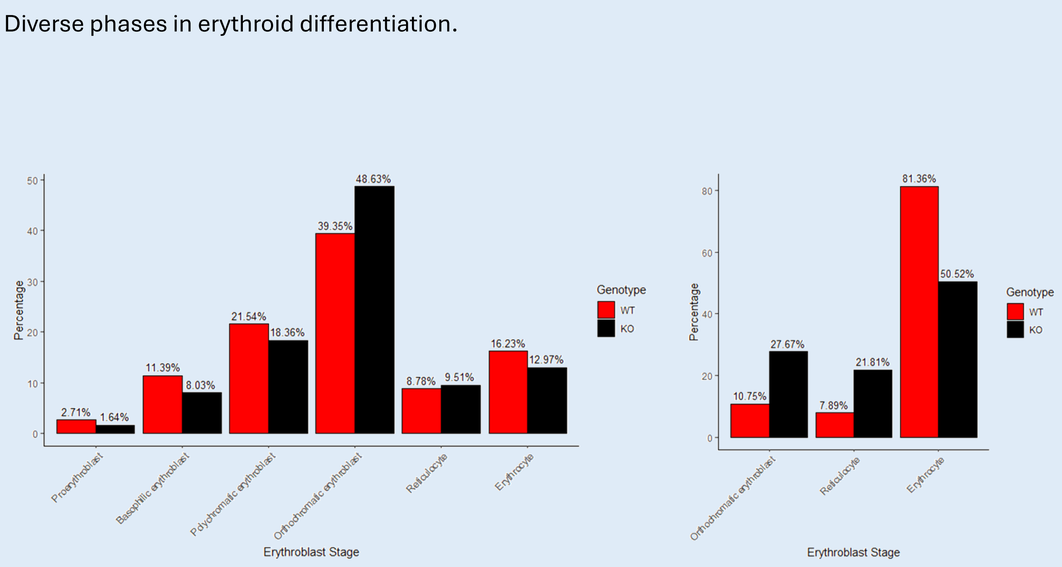

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Cortes histológicos… coming soon!

CONCLUSIONS

- EBIs in CD43-/- mice are less organized than WT mice. Considering that, CD43 may be participating in the correct and effective adhession between the central macrophage and each erythroblast.
- Hematology shows significant differences in neutrophiles and lymphocytes levels between WT and CD43-/- mice.
- There is a deficiency in completing erythroid differentiation in abscence of CD43, indicating that CD43 has an important role in erythropoiesis.
- Extramedullary erythropoiesis may be ocurring in abscence of CD43.

REFERENCES

1. Bai, J. et al. CD169-CD43 interaction is involved in erythroblastic island formation and erythroid differentiation. Haematologica 108, 2205–2217 (2023).

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