



Differential Expression of Chemokines, Chemokine Receptors and Proteinases by Foreign Body Giant Cells (FBGCs) and Osteoclasts

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Overview

Osteoclasts are derived from the fusion of monocyte / macrophage lineage and are responsible for bone homeostasis¹. Macrophages in the presence of a foreign body can also fuse to form Foreign body giant cells². One of the important chemotactic factor for macrophages is CCL2³, that binds to its primary receptor CCR2⁴. Here we test the differential expression of chemokines, their receptors and proteinases by these cells to identify potential and specific targets.

Materials and Methods

Osteoclasts and FBGC were cultured from the bone marrow cells were divided into two groups. One group of cultures were fixed and subsequently TRAP stained while the second group was used for gene expression analysis.

Results

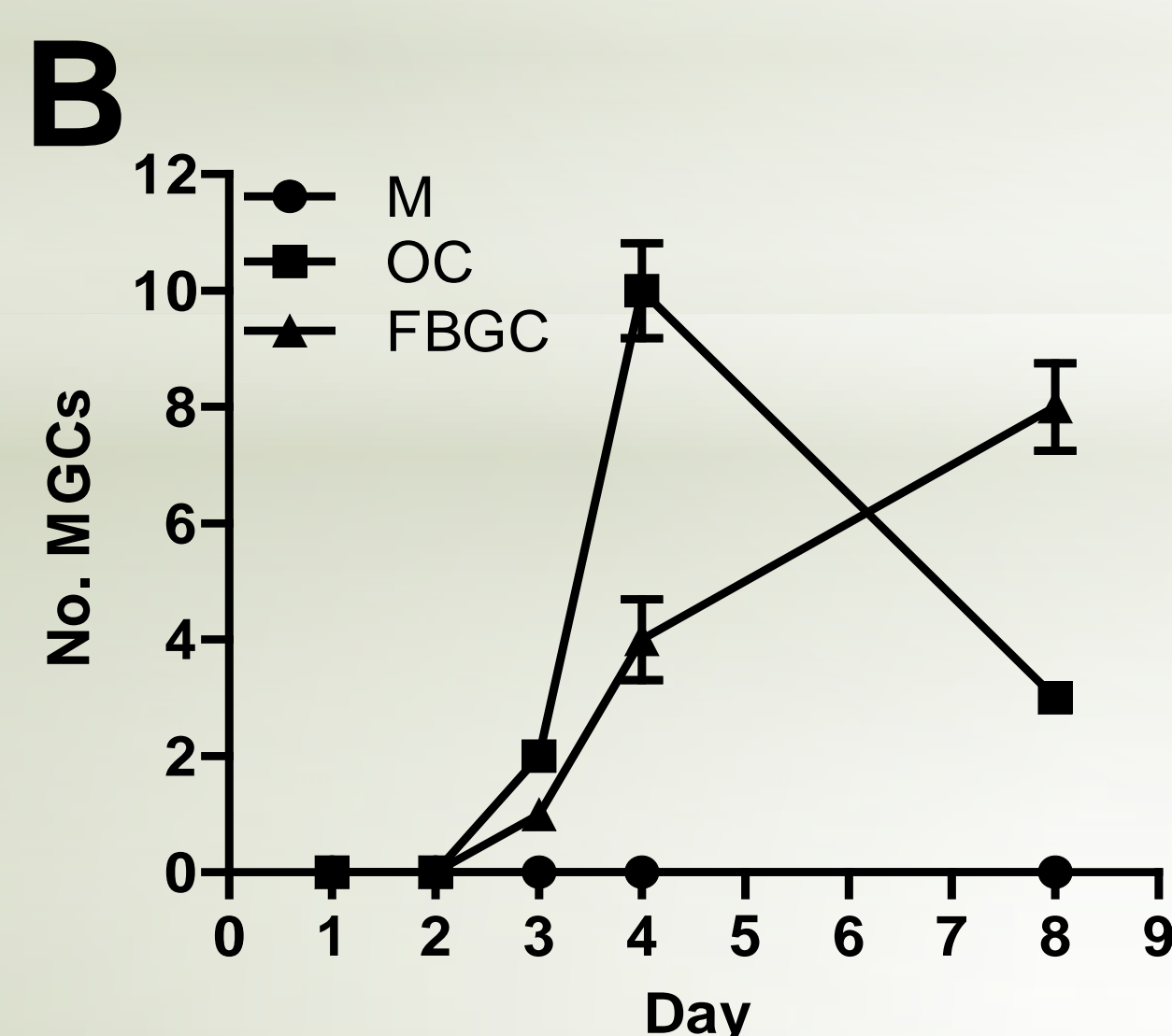
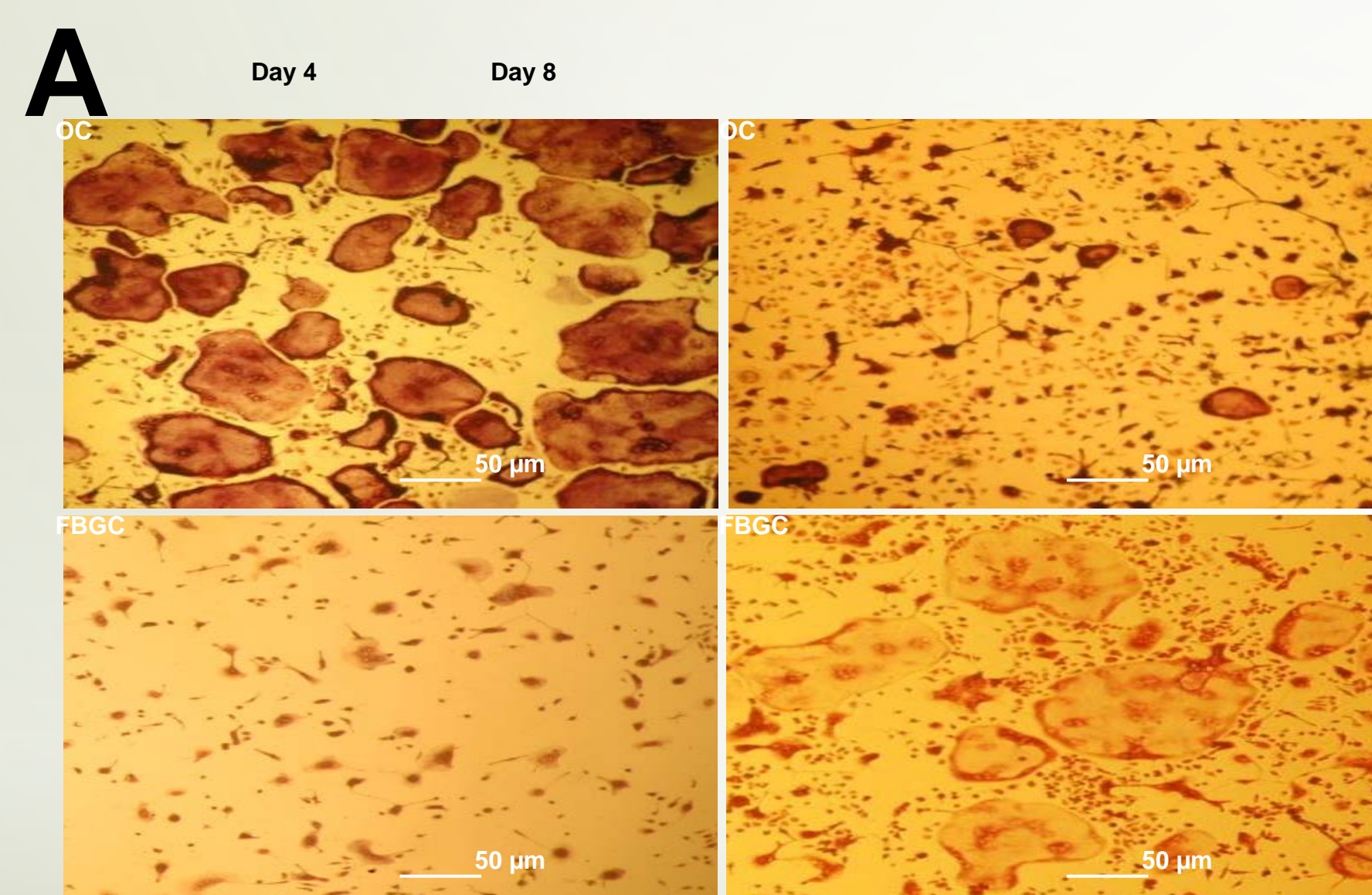


Fig. 1 Osteoclasts numbers and size were significantly more on Day 4 compared to FBGCs while on Day 8 FBGCs were recorded in greater number compared to osteoclasts

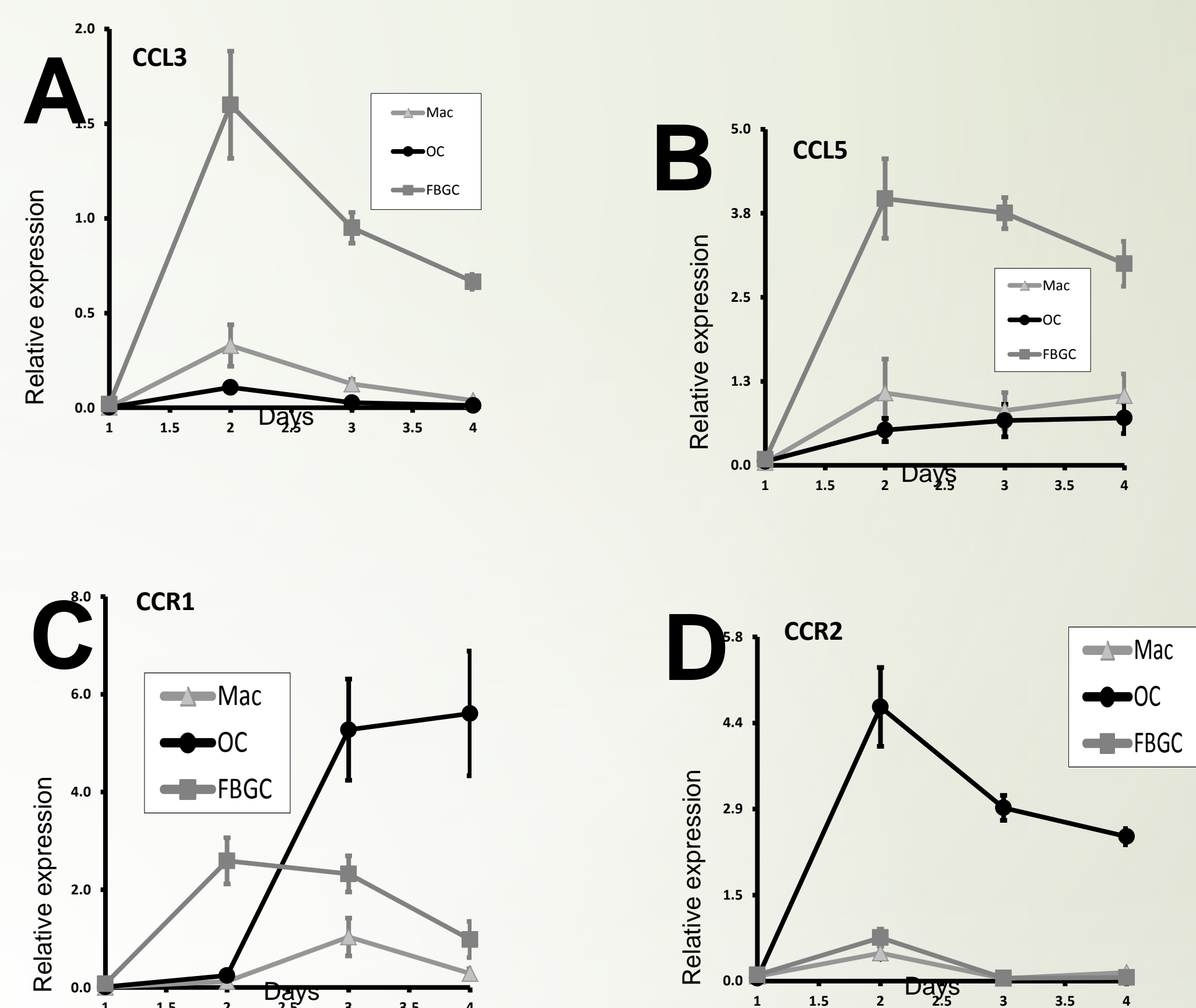


Fig. 2 Chemokines and their receptor expression by osteoclasts and foreign body giant cells

Discussion

FBGCs are associated with inflammatory conditions (i.e. foreign body reactions) hence the inflammatory chemokines were more expressed by these cells compared to osteoclasts. Interestingly, the expression of chemokine receptors were highly expressed by osteoclasts compared to FBGCs.

Furthermore, FBGCs exhibited a significantly lower expression of osteoclast related genes (i.e. RANK, NFATc1, MMP9 TRAP etc) and were not able to resorb bone,

References

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