

# *In vitro* study of recruitment ability of macrophages and trophoblasts, in early human pregnancy



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## Introduction

Normally, recognition of a foreign antigen results in an immune response, while during normal pregnancy, the foetus is tolerated by the maternal immune system even though it expresses both maternal and paternal antigens.

It is known that the local cell composition in the decidua varies from that found in blood. Macrophages and natural killer (NK) cells are the major cell types. These decidual macrophages (dMØ), which are alternatively activated, and trophoblasts, placental cells of foetal origin, are believed to be involved in foetal tolerance.

The aim of this study was to develop a method and test the recruitment of cells by dMØ and trophoblasts, to investigate if they are involved in generating the special cell composition found in the decidua.

## Materials and methods

Peripheral blood mononuclear cells (PBMC) placed in the transwell inserts migrated through a Matrigel coated membrane, if recruited by the *in vitro* differentiated macrophages or the trophoblasts cell line plated in the lower wells (Figure 1). Flow cytometry was used to analyse number of migrated cells and cell types.

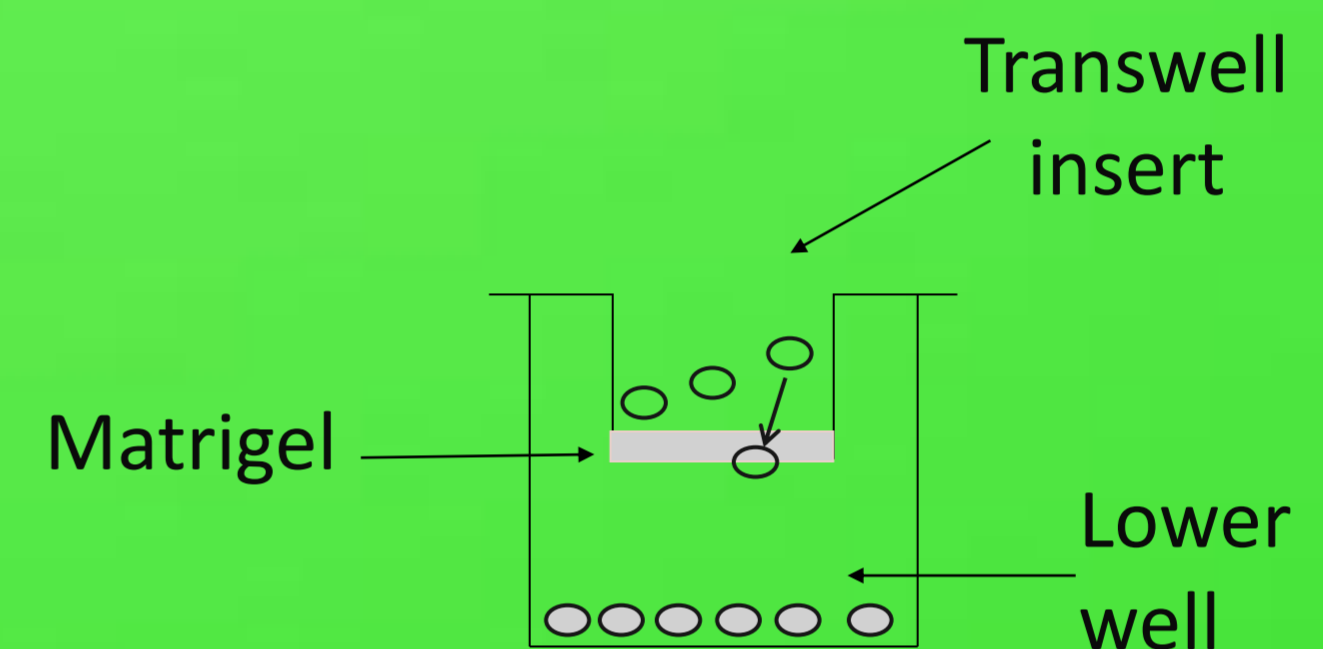


Figure 1. Experimental set-up.

## Results

*In vitro* alternatively activated macrophages hold a recruiting ability and recruit monocytes (Figure 2). Further there was an indication that trophoblasts also hold a recruiting ability and can recruit monocytes (Figure 3). Neither cell types were shown to recruit NK cells.

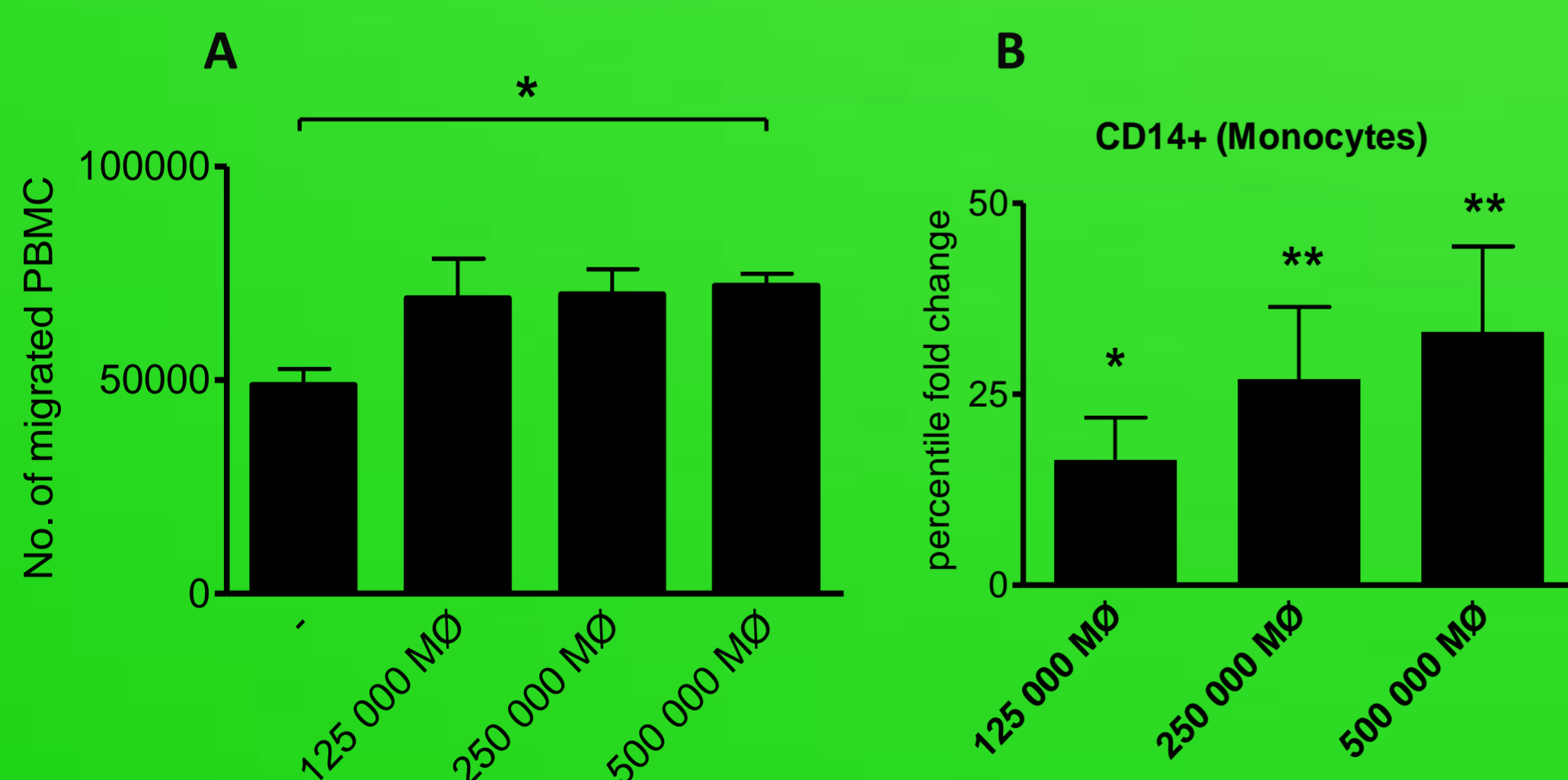


Figure 2. Alternatively activated macrophages as recruiting cells. A) Shows the number of migrated PBMC and B) increase in migrated monocytes compared to medium alone.

Significance is displayed as: \* ( $p < 0.05$ ) and \*\* ( $p < 0.01$ )

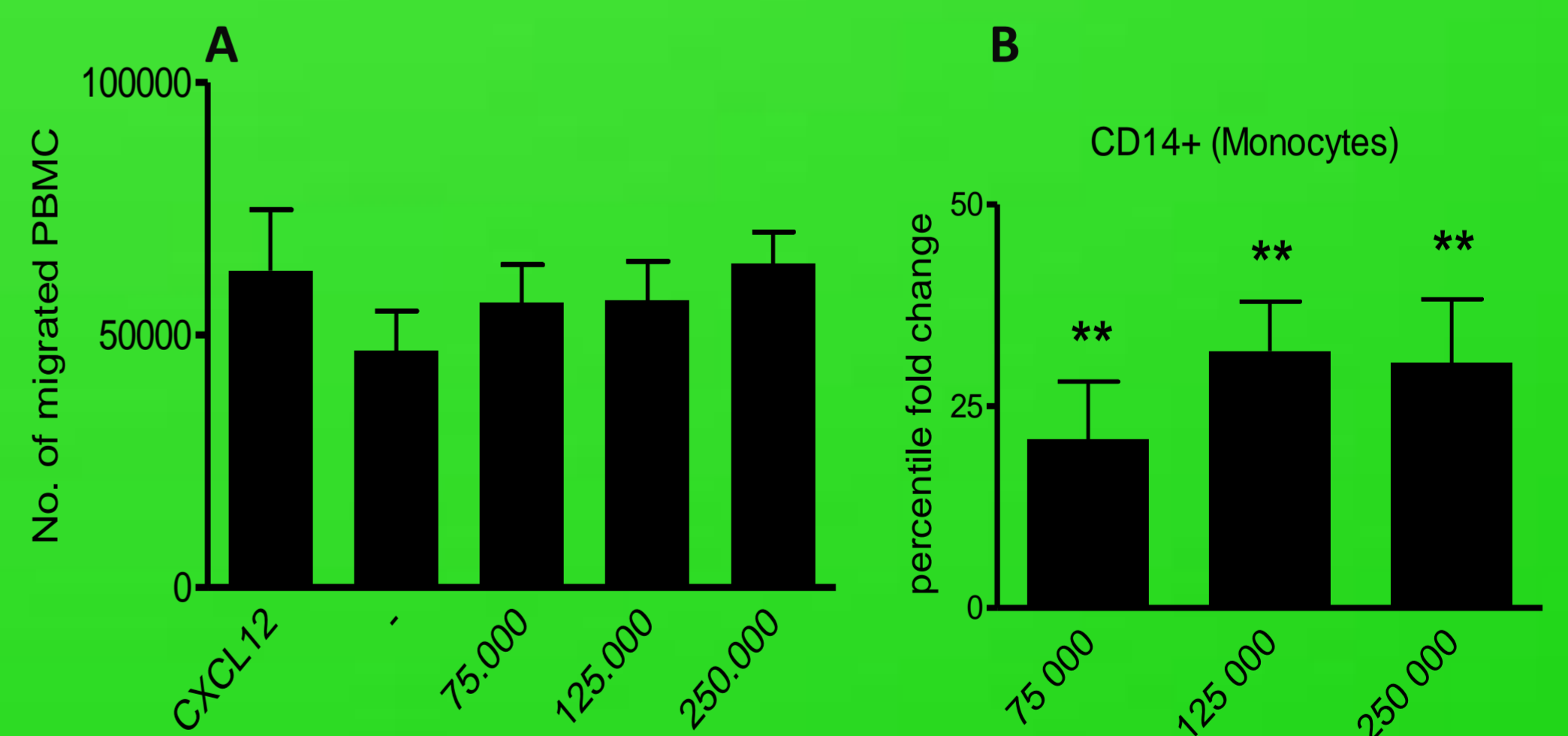


Figure 3. Trophoblasts as recruiting cells. A) Shows the number of migrated PBMC and B) increase in migrated monocytes compared to medium alone.

## Conclusion

Preliminary results indicate that *in vitro* alternatively activated macrophages, which are phenotypically similar to dMØ, and trophoblasts can recruit monocytes.

