

### Conclusion

A migration assay was successfully developed, this migration assay allowed investigation of the selective recruitment of PBMCs by macrophages and trophoblasts. The preliminary results of this study showed that *in vitro* alternatively activated macrophages, which are phenotypically similar to decidual macrophages, and trophoblasts can recruit monocytes.

### Acknowledgements

A warm thanks to my supervisors; Jan Ernerudh, Judit Svensson and Sofia Freland, for the enthusiasm and support I have received.



### Implications

This type of basic research helps us understand cellular functions of normal pregnancy. Further, investigation of potentially important molecules can explain their role in the development of complications during pregnancy.

### Contact:

**E-mail:** [carwe893@student.liu.se](mailto:carwe893@student.liu.se)

**Webpage:**

[https://cms.ifm.liu.se/edu/biology/master\\_projects/2010/student-presentation-of-t/caroline-wendel/](https://cms.ifm.liu.se/edu/biology/master_projects/2010/student-presentation-of-t/caroline-wendel/)

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

Caroline Wendel



Masters thesis:  
Molecular Genetics and Physiology  
2010  
Linköping University

Supervisors: Jan Ernerudh, Judit Svensson and Sofia Freland

## Background

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. Although the exact mechanisms behind this tolerance is not fully understood it is known that the both systemic and local changes in the maternal immune system occurs.

The local cell composition in the uterine lining in pregnancy, named the decidua, differs from that in blood. Macrophages and natural killer (NK) cells are the major cell types present.

These decidual macrophages, which are alternatively activated, and trophoblasts, placental cells of foetal origin, are believed to be involved in foetal tolerance.

## Aim

- ◆ To develop a migration assay
- ◆ Test the recruitment ability of decidual macrophages and trophoblasts.

## 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.

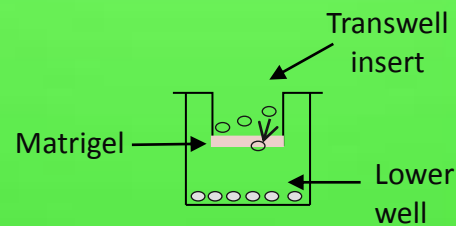


Figure 1. Experimental set-up.

## 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.

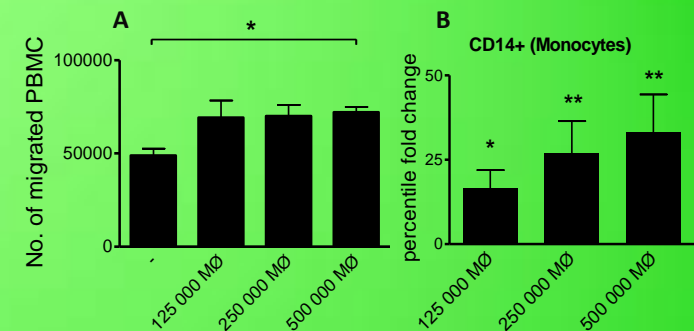


Figure 2. Alternatively activated macrophages as recruiting cells. A) Shows the number of migrated PBMC and B) increase in migrated monocytes compared to medium alone.

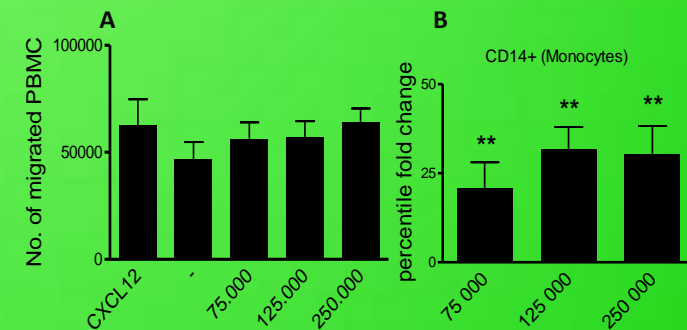


Figure 3. Trophoblasts as recruiting cells. A) Shows the number of migrated PBMC and B) increase in migrated monocytes compared to medium alone.

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