Glycerophospholipid signaling at the interface between osteoclast and T cells

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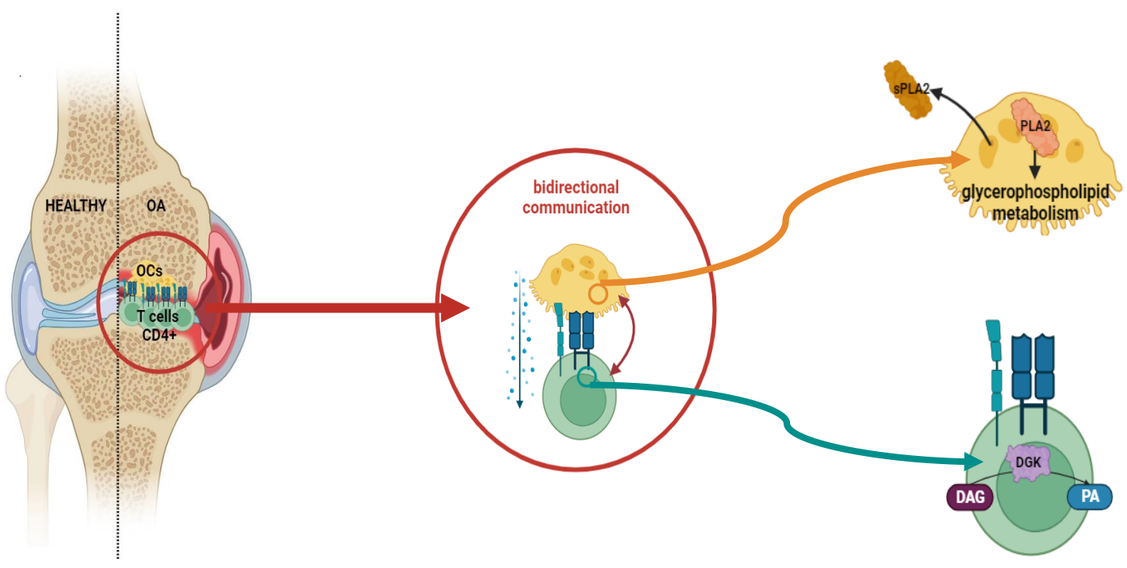
INTRODUCTION

An important role in osteoartrites (OA) is held by the infiltration of T cells in the synovial fluid and the interplay between these cells and osteoclasts (OCs).

Diacylglycerol kinases (DGKs) modulate T-cell activity by metabolizing diacylglycerol whereas secreted phospholipases A2 (sPLA2) controls Ocs differentiation and function.

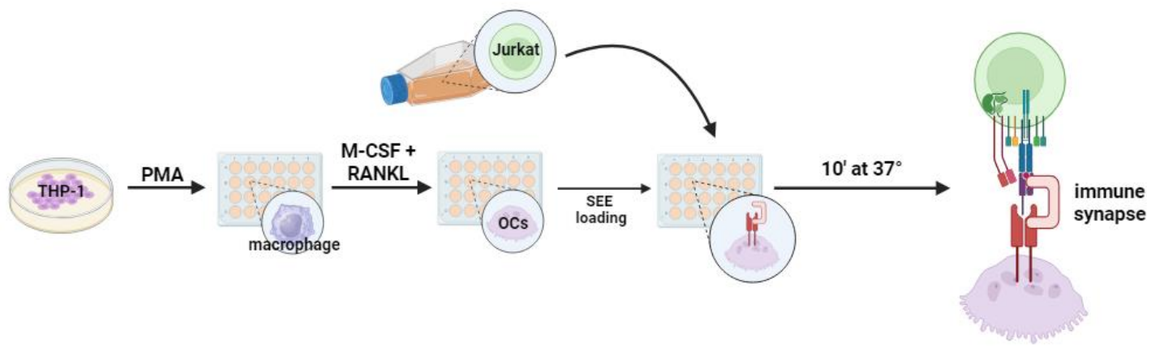


The possibility to control the bidirectional communication between T-cells and OCs by manipulating glycerophospholipid signaling is the focus of this project.

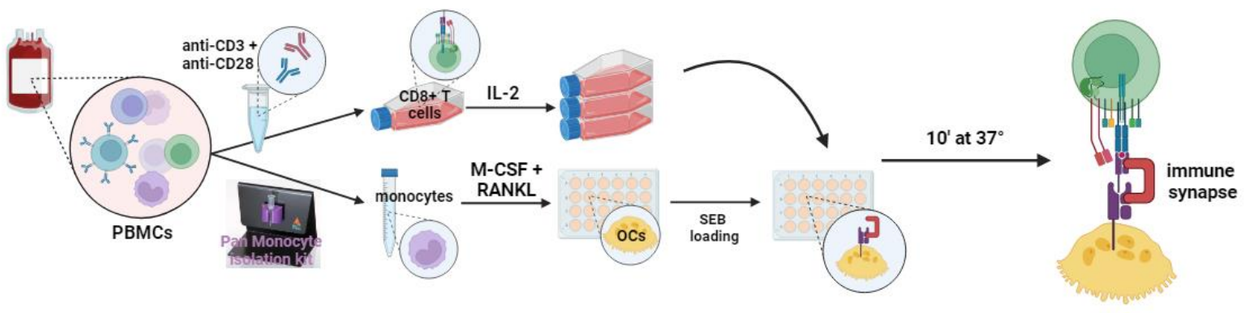
MATERIAL AND METHODS

Establishment of an OA model: superantingen induced osteoclast-T cells immune synapse

- **IS among cell lines**

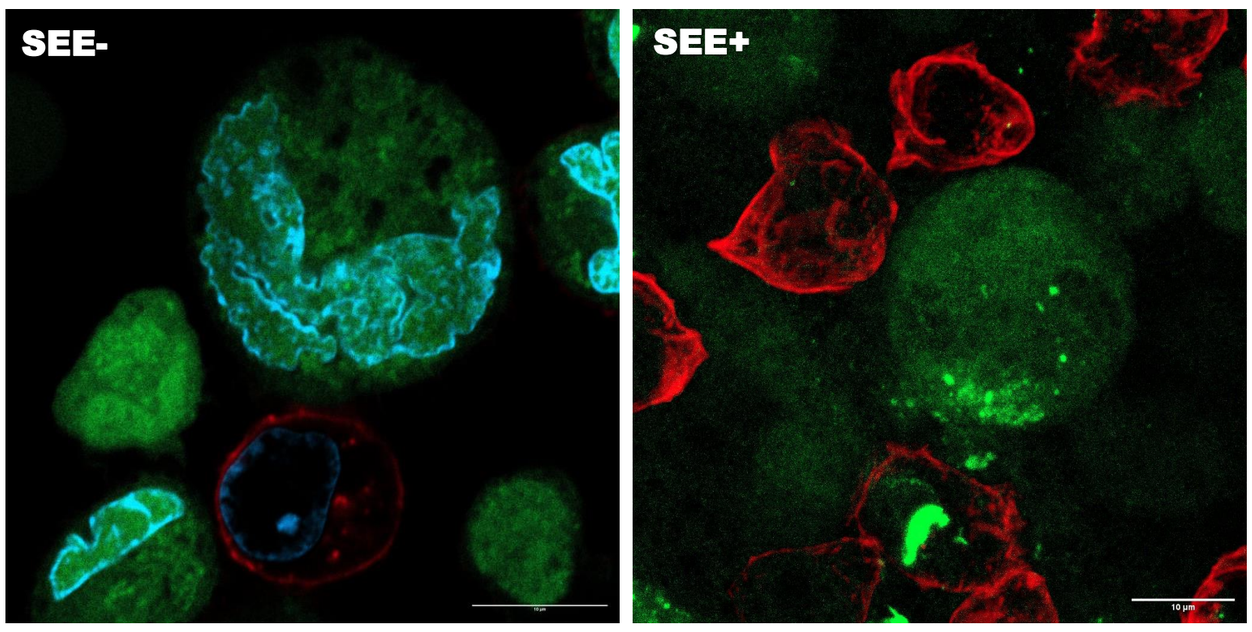


- **IS among autologous primary cells**



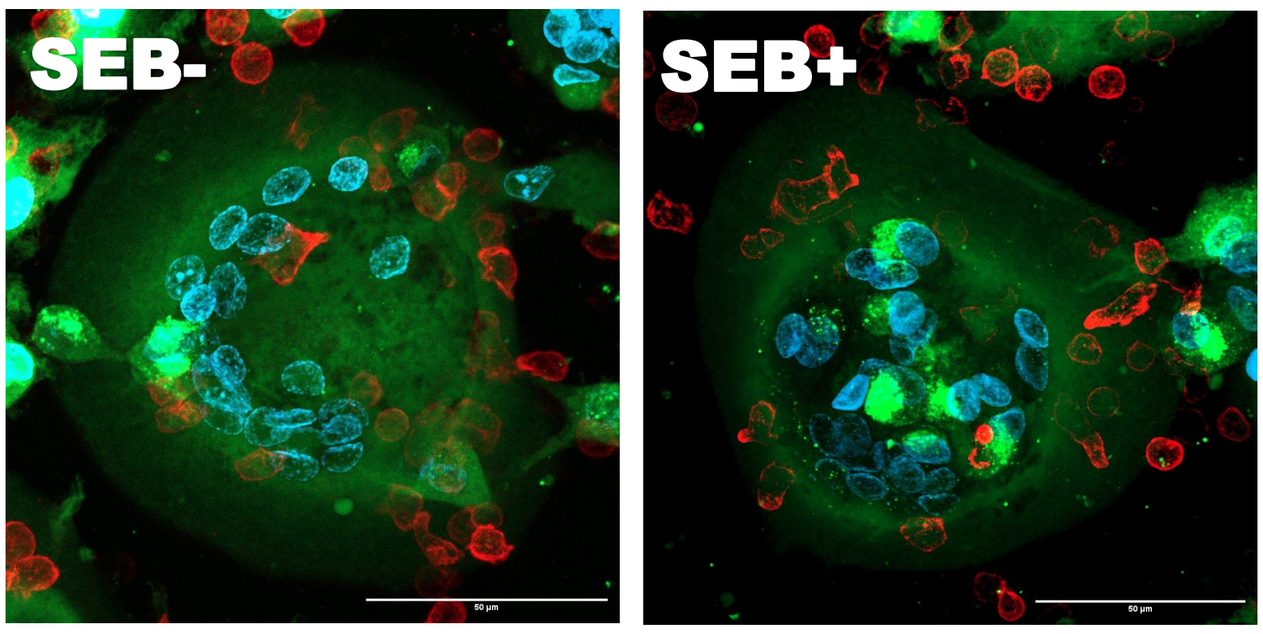
RESULTS

SEE-induced immune synapse among OCs (THP-1 derived) and Jurkat cells



Z-projection, Zeiss-LSM980 confocal (63X). Scale bar 10µm. Cyan, nuclei (Hoechst); green, cytoplasm (CFSE); red, actin (SiR-actin)

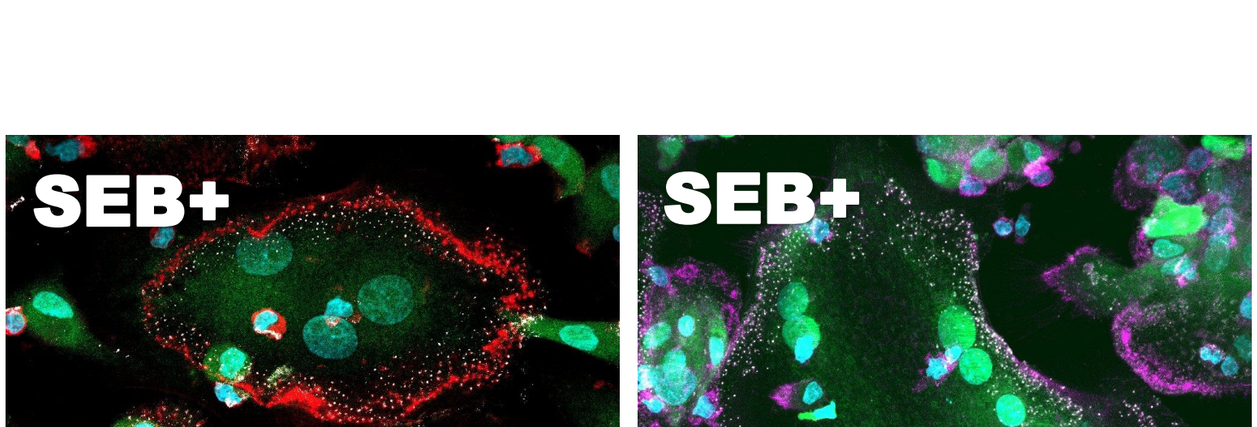
SEB-induced immune synapse among OCs and CD8+ T cells



Z-projection, Zeiss-LSM980 confocal (63X). Scale bar 50µm. Cyan, nuclei (Hoechst); green, cytoplasm (CFSE); red, actin (SiR-actin)

CONCLUSIONS AND FURTHER PROSPECTIVES

- We established an OC–T-cell interaction system, both for autologous primary cells and cell lines.
- We expect to show an important role of DGKs and sPLA2 in controlling this bidirectional communication.
- **We predict the possibility to manipulate DGKs and sPLA2 activity to modify the outcome of the disease**.



Z-projection, Zeiss-LSM980 confocal (63X). Scale bar 50µm. Cyan, nuclei (Hoechst); green, cytoplasm (CFSE); red or purple, actin (SiR-actin); white, phospho-tyrosine antibody staining

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