

**Abstract:**

This bachelor's thesis focuses on the preparation of a soluble form of the NKR-P1 human natural killer cell receptor and its ligand LLT1. NK cells play a crucial role in the immune system, with the NKR-P1 receptor and its ligand LLT1 being important molecules in regulating their activity. The aim of this work was to express and purify these two proteins in a soluble form. The thesis describes the successful production and purification of the soluble form of the NKR-P1 receptor and its ligand LLT1.

Subsequently, these proteins will be used for the production of specific nanobodies, which will be labeled with fluorescent markers. Fluorescently labeled nanobodies will enable detailed study of the interactions between NKR-P1 and LLT1 at the single-molecule level using super-resolution microscopy based on single-molecule localization. This approach can provide insights into the mechanisms by which NK cells recognize target cells, which is important for the development of new therapeutic strategies in the treatment of cancer and autoimmune diseases.

**Keywords:**

NK cells, NKR-P1, LLT1, HEK293T, piggyBac