Dissecting the tumoricidal potential of ILC2s in melanoma

Melanoma is a serious type of skin cancer mainly caused by overexposure to UV radiation from the sun. It begins in cells called melanocytes, which are responsible for the production of pigment melanin, which gives skin its color to block the UV radiation from damaging DNA and potentially causing cancer. The chances of successfully treating melanoma drop significantly once it spreads (or metastasizes) to other vital organs such as lungs, liver or brain.

In 2018, the mortality rate registered in Poland was the highest among the European Union countries. Low awareness can contribute to detection delay, which significantly decreases chances of survival but also increases problems associated with the treatment as well as costs of care.

Cancer immunology is probably one of today's most important fields of cancer research. The development of cancer immunotherapy has undoubtedly advanced the field and provided hope for patients with advanced cancer. However, the benefits, to date, have been limited to a minority of patients. Additionally, a significant subset of patients eventually develops resistance.

In contrast to chemotherapy and radiotherapy, immunotherapy does not attack cancer itself. Instead, it works by helping the patient`s immune system to recognize and destroy cancer cells. Therefore, critical to successful cancer immunotherapy is knowledge of interactions between components of the complex tumor microenvironment.

The newly discovered family of immune cells, group 2 innate lymphoid cells (ILC2), appear to play a crucial role in protection against melanoma. However, much more knowledge is necessary to fully understand the mechanisms of their action.

The goal of this project is to assess the protective role of ILC2s in melanoma through the analysis of their interactions with components of the tumor microenvironment. A better understanding of the role of ILC2s in cancer will contribute to the advancement of the research filed. Additionally, the possibility to enhance the protective potential of ILC2s will form the basis for the development of new immunotherapies for treating melanoma and other forms of cancer in the near future.