**Technical University of Denmark** DTU

# Popular science summary of the PhD thesis

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| PhD student | Sofie Ramskov |
| Title of the PhD thesis | Identification of T Cell Antigens for Precision-Targeted Immune Therapy of Cancer |
| PhD school/Department | Life Science/DTU Health Tech |

# Science summary

* Please give a short popular summary in Danish or English (approximately half a page) suited for the publication of the title, main content, results and innovations of the PhD thesis also including prospective utilizations hereof. The summary should be written for the general public interested in science and technology:

Immune therapy of cancer is any form of therapy that aims to activate the immune system to recognize and eliminate cancer. In recent years unprecedented success of immune therapy in a number of cancer types have led to a paradigm shift in cancer treatment, establishing immune therapy as a new pillar of treatment next to conventional treatments such as radiation, surgery and chemotherapy.
However, only a subgroup of patients benefit from current treatment options, and a general problem with most immune therapies is that they are not specifically targeted to the patient's tumor. Precision-targeted immune therapy aims to solve this issue by steering effector cells of the immune system, so called T cells, towards specific targets on the tumor. The aim of the presented thesis, which comprises four research papers, is to identify and characterize such T cell targets. The first research paper describes identification of four novel T cell targets in breast cancer. Breast cancer is one of the leading causes of cancer related deaths in women, but in terms of immune therapy much less explored, partly due to a minimally described landscape of T cell targets. The second research paper describes the first identification of T cell targets derived from mutational products, so called neoepitopes, in renal cell carcinoma. The third research paper describes T cell targets, also from mutational products, in non-small cell lung cancer, and investigates the influence of tumor heterogeneity on immune recognition of these targets. The fourth research paper reports a finding across three different cancer cohorts, that T cell recognition of peptides bound by the human leukocyte antigen C subtype compares to or even exceeds T cell recognition of peptides bound by human leukocyte antigen A and B subtypes – a surprising finding, given that the human leucocyte antigen C subtype is known to be expressed at a lower level at the surface of tumor cells. Together these research studies contribute to the identification and characterization of novel targets for immune therapy of cancer and facilitate the development of precision-targeted strategies.

Please email the summary to the PhD secretary at the department