

Improving the way we assign prostate cancer treatment

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May-Britt Tessem's research group at the Norwegian University of Science and Technology has already discovered metabolic markers in blood that can separate prostate cancer from benign prostatic hyperplasia. Now the European Research Council has awarded Tessem a EUR 1.5 million grant to continue her research. Credit: Geir Otto Johansen, St. Olavs Hospital, Trondheim

Prostate cancer is the most common cancer among men in Europe. Every year around 5000 men in Norway are diagnosed with the disease.

Many different types of [prostate cancer](#) cannot be distinguished yet. Researchers have lacked the diagnostic tools to accurately differentiate the aggressive forms from the less aggressive types.

Some patients require aggressive treatment of the disease, but this isn't always necessary. The inability to assess the extent of the [cancer](#) leads to many people being overtreated and subsequent suffering from unnecessary ailments.

A Trondheim-based research group at the Norwegian University of Science and Technology (NTNU) wants to do something about this. Researcher May-Britt Tessem is heading up the team, which is affiliated with the MR Cancer Group at NTNU's Department of Circulation and Medical Imaging.

The European Research Council, affiliated with the EU, is so impressed with the work of the Tessem Group that Tessem has been awarded a prestigious European Research Council (ERC) Starting Grant for her research on [prostate](#) cancer.

Distinguishing high-risk cancer forms

Tessem is conducting basic research on prostate cancer. The research group is working on MR prostate imaging.

The group wants to find clinical diagnostic markers that can help prevent overtreatment with its attendant side effects and reduced quality of life. At the same time, the researchers hope to identify the most high-risk cases.

To this end, Tessem and her colleagues aim to provide information about the molecular signature of each patient.

New technology

In the research project supported by the EU, Tessem is shifting from studying one type of cancer in a cell line to retrieving tissue from prostate cancer patients in major tissue biobanks.

"To do this, we'll be using new and groundbreaking imaging technology, called 'multi-omics technology'," she said .



May-Britt Tessem, a researcher at the Norwegian University of Science and Technology, is working with tissue samples from a range of well-established Norwegian biobanks in her quest to better understand prostate cancer. Credit: Geir Otto Johansen, St. Olavs Hospital, Trondheim

The new technology enables a three-dimensional overview of the tissue and what it consists of.

The technology will be used on one and the same tissue sample from around 1000 patients. These samples come from high quality biobanks at NTNU and St. Olavs Hospital: MR Biobank, Biobank 1 and MRI-Guided Biopsies.

On the path to a solution

Tessem's group is building on one of its recent discoveries. The group has detected two metabolic biomarkers, which are substances in the body

that can be analyzed and that tell us something about the condition of the body.

These two particular biomarkers can reveal information about prostate cancer. The biomarkers appear to determine whether prostate cancer patients are likely to relapse after surgery, so they can be important markers for aggressive prostate cancer.

The markers can make it easier to detect the life-threatening types of prostate cancer that require fast and personalized treatment. These can be detected before receiving treatment in an MRI scanner.

This method could become an important path to developing new medications.

The British Journal of Cancer has accepted and will soon publish the research group's findings.

Big consequences

The lack of good [diagnostic tools](#) has major consequences. Patient exams involve a risk of infection, which is particularly problematic in patients with antibiotic resistance.

Currently, even men with a non-life-threatening form of prostate cancer have their prostate removed, receive radiation treatment and become sterilized from hormone treatment. We know that prostate treatment leaves many [patients](#) with a greatly reduced quality of life and significant side effects such as incontinence, erectile dysfunction and depression - in some cases ending in suicide.

Preventing overtreatment is thus a very important aspect of the group's goals.

Tessem is the fourth NTNU researcher in the Horizon 2020 research programme to receive this kind of ERC Starting Grant, and the first female. The funding of EUR 1.5 million will be spread over five years.

Provided by Norwegian University of Science and Technology

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