

“With micro-CT, we can obtain 3D X-ray images that allow us to evaluate the sample at different depths and from different angles. Using the DANMAX beamline, we expect to obtain high-resolution images that allow us to distinguish small vessels invaded by tumor cells.”

3D X-RAY MAY HELP DOCTORS GUIDE LIVER CANCER TREATMENT

MAX IV Open Day 2025

Liver cancer is one of the most common cancers worldwide and has a very poor prognosis

Even when doctors find the cancer early and patients undergo surgery with curative intent, more than half of them experience a recurrence.

One of the strongest predictors of recurrence and survival is microvascular invasion

This means that tiny blood vessels near the tumour are invaded by cancer cells, which makes the disease more likely to spread and return.

Unfortunately, current clinical methods cannot reliably detect this invasion before surgery

Doctors urgently need better tools to predict which patients are most likely to benefit from surgery or other treatments.

In this pilot project, the team is exploring a new diagnostic approach using microtomography

By applying this 3D X-ray imaging technology, the team aim to visualise the tumour and surrounding blood vessels in unprecedented detail. This could allow doctors to assess microvascular invasion before surgery, which could transform how doctors evaluate patient prognosis.

The goal of this HALRIC pilot project is to develop a reliable and non-invasive way to identify which patients with liver cancer have higher risk of recurrence, leading to improved treatments, survival, and quality of life.

Find out more about the pilot project and its partners at halric.eu/pp36



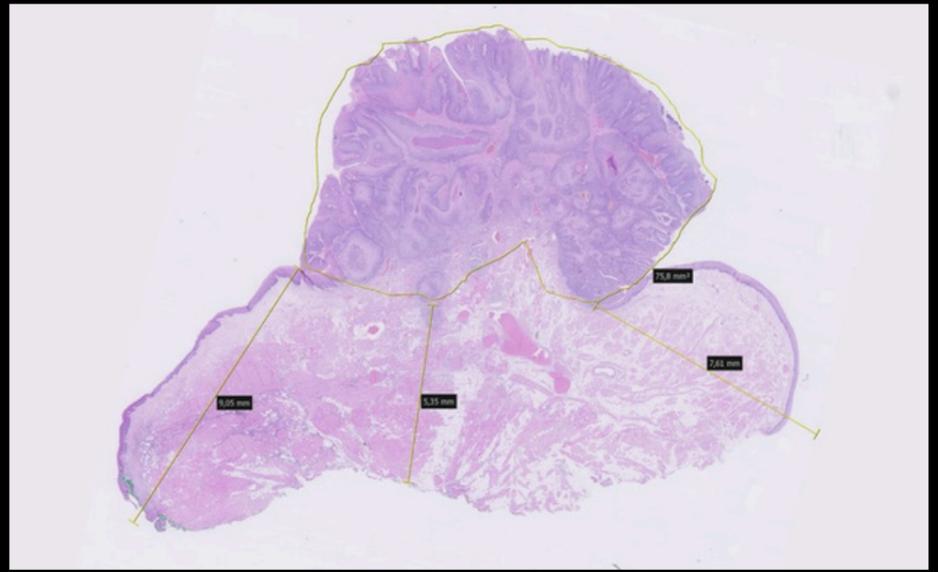
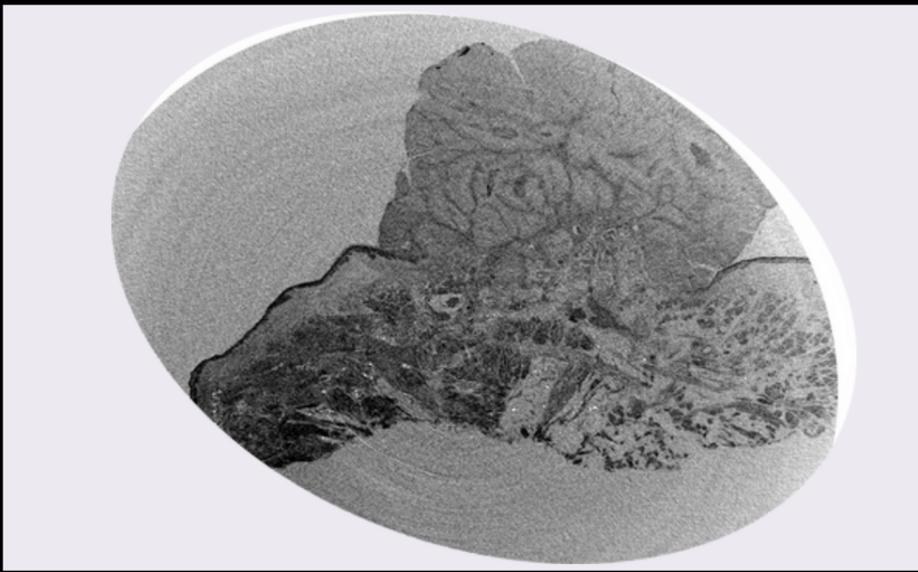
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Micro-CT of a tumour sample (~4 hours) vs histology (~7 days)

MICRO-CT TO IMPROVE SURGICAL PRECISION IN ORAL CANCER

MAX IV Open Day 2025

Oral cancer has a high recurrence rate

A key reason is the difficulty of achieving adequate surgical margins. If too little healthy tissue is removed, the tumour is more likely to return; if too much, patients risk serious complications.

Currently, there is a lack of 3D visualization when assessing tumors

Tumor evaluation is based on histopathology that provides two-dimensional tumor visualization and it is time consuming. Results usually take between 7 to 12 days.

Micro-CT could improve precision in surgery, lowering the risk of recurrence

Already studied in breast cancer, this 3D X-ray imaging technique could help surgeons by providing more accurate margin assessment.

In this pilot project, the team is providing 3D visualization of surgical specimens

By performing micro-CT scanning on surgically removed oral tumors, this project will provide 3D visualization of tumor tissue that allows for quick and precise assessment of tumor margins.

The goal of this pilot project is to investigate the feasibility of micro-CT imaging in the assessment of surgical margins in oral cancer surgery, leading to faster and optimized tumor margin assessment.

Find out more about the pilot project and its partners at halric.eu/pp09



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