

Title

Cryo optimized tissue sampling for ensuring diagnosis and personalized treatment of cancer in the lungs

English resume

Lung cancer is the leading cause of cancer related deaths world-wide. Lung cancer screening will increase the number of small lung lesions in need of biopsy to confirm the diagnosis. Obtaining lung biopsies with a bronchoscopy has the lowest risk of complications (1-2%) compared to other modalities such as transthoracic needle biopsy (20%), however diagnostic yield needs improvement. Currently a diagnosis is established in 50- 70% of the bronchoscopic procedures depending on the step-up. One way to improve the yield would be by using a cryo probe through the bronchoscope which freezes a small part of the lung for extraction, and thereby provides larger biopsies for examination. This will increase the chances of obtaining sufficient material from a small lesion to determine the diagnosis.

Lung biopsies are also needed to find tumor markers used in precision medicine. The expansion of available treatments requires biopsies with more tissue than what is used just to determine malignancy. Cryo biopsies could be of great value for providing the pathologists with the tissue needed for extensive testing.

In this project we plan to conduct three studies. The DR CRYO study will compare cryo biopsies to forceps biopsies for the diagnosis of peripheral lung lesions. The ICE ICE study will investigate the feasibility of using a cryo probe to collect tissue samples in patients with progression of incurable cancer for extensive tumor marker testing in the PRECODE study. Finally we will conduct a study on the patient's perspective of undergoing bronchoscopy and preferences with regards to the dilemma when choosing between high-risk and high hit rate procedures or low-risk procedures with a lower hit rate.

We hope that the cryo biopsies can improve the diagnostic capabilities of bronchoscopy and provide better biopsies for tumor marker analyses. The project is relevant both for patients undergoing diagnostic work-up for lung cancer in early stages as well as patients with all types of incurable cancer dependent on biopsies to find the treatment which will target their specific mutations.