

Success Stories

Towards a better identification of prostate cancer

A molecular pathology approach for prostate cancer research : Application of the laser capture micro-dissection technology

Within the scope of the FNR BIOSAN programme, a team around Dr. Nelly Kieffer is currently carrying out a research project entitled "A molecular pathology approach for prostate cancer research: Application of the laser capture micro-dissection technology". This project, which started the 1st of November 2002 and was initially due to finish the 31st of May 2007, involves the Laboratoire de Biologie et Physiologie Intégrée (based at the University of Luxembourg), the National Health Laboratory (Laboratoire National de Santé) and the Centre Hospitalier Emile Mayrisch.

When the BIOSAN programme was launched, the need to do research on cancer, preferably on breast cancer and on prostate cancer, became apparent. Yet, there is very big international competition within the area of breast cancer research, so that launching a research project in this area would certainly have meant duplicating efforts. This, especially as both previous experience and a critical mass in this domain are absent in Luxembourg. Dr. Kieffer explains: "We thus made the choice to do research on prostate cancer, while grounding our methodological approach on the exploitation of histological blocs from the Morphological Registry of Tumours of Luxembourg. This is a unique national registry that does not exist in France, nor in Germany or in the United States, and which has permitted us to carry out very competitive work on an international level".

Prostate cancer is the most commonly diagnosed non-cutaneous cancer and the second leading cause of cancer-related death for men in Western industrialised countries. With this in mind, the objective of the project is to set up new, state-of-the-art molecular biology technologies in order to search for and identify new prognostic biomarkers able to discriminate indolent prostate cancers from tumours having the potential to progress to lethal metastatic disease. The following methods are used for the research project: laser micro-dissection technology and real-time PCR (Polymerase Chain Reaction), together with immunohistochemistry.

The results of the project have been disseminated within the scientific community through conferences and scientific publications. In particular two publications in high-ranking scientific journals (the International Journal of Oncology and the International Journal of Cancer) were published. The results of the project have even been discussed in OncoLink, a prominent web resource for cancer issued by the University of Pennsylvania. In April 2007, Reuters Health has reported therein on the results while interviewing Dr. Kieffer. The fact that the loss of PTEN expression may be an early marker of prostate cancer metastasis risk can potentially be of interest for the scientific community working on prostate cancer. But besides the scientific community, there

are, of course, also practical applications stemming from the research. "It is clear that the results will first of all be of benefit for those who have got prostate cancer because we have identified a marker that could probably identify the patients whose prostate cancer will evolve into the aggressive metastatic form", Dr. Kieffer reveals.

The research project was extended for another 2 years, which will enable for a transfer of technology from the Laboratoire de Biologie et Physiologie Intégrée to take place and to create a new laboratory of molecular pathology at the National Health Laboratory. This new laboratory will work in close collaboration with the department of histo-pathology and will routinely utilise the techniques that were developed during the first phase of the project. According to Dr. Kieffer, these new molecular technologies will contribute to a better diagnostic of prostate cancer and more precise evaluations of the anomaly of cancer cells.

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