Patrick Pauwels (Tumorbank curator), Sofie Goethals (Biobank manager) and Mieke De Wilde (Biobank quality manager)

Patrick Pauwels obtained his MD certificate at the Catholic University of Leuven in 1985. After a two year fellowship in Internal Medicine, he started a residency in Pathology at the University of Leuven. He then worked as a staff pathologist in Eindhoven until 2002. Thereafter he worked at the Maastricht University Medical Center until 2005. From 2005 until 2009 he was pathologist at the Ghent University Hospital. Since 2009, he works at Antwerp University Medical Center. He obtained his PhD at the University of Leiden in 2004 in the field of molecular pathology. Professor Pauwels is head of the laboratory of molecular pathology and co director of the Center of Oncology Research (CORE) at Antwerp University. He is professor in Molecular Oncopathology at Antwerp University. Since 2009, he is curator of tumorbank@UZA at the Antwerp University Hospital and is a member of the Belgian Virtual Tumorbank steering committee.

Mieke de Wilde studied biology and biochemistry at Antwerp University. She worked for SGS as a medical writer and acquired laboratory experience as an assistant in plant physiology. Since 2010, she works for the Biobank of Antwerp University Hospital. Initially, this compromised a range of tasks, from practical lab work and handling sample requests, to the daily management. As the team grew bigger, her main focus became quality management. She is a member of the ISBER proficiency testing advisory board and a ISO/TC276 & CEN/TC233 committee member.

Sofie Goethals holds a Master in Biomedical Sciences and worked from 2007-2013 as a research technician at VIB institute in Antwerp, in the department of Molecular Genetics. Here she mastered many technical skills such as (primary) cell cultures, animal modelling, protein and genetic work which provided her a sound scientific and technical background. In 2014 she joined the Biobank of the University Hospital of Antwerp to work as a biobank manager. Her current focus is project management, process optimization and database maintenance. Together they are part of a strong and growing team of enthusiastic biobankers that are eager to support scientific research.

Interview by Andrea Wutte

Patrick, what is your biobank specialised in?

P In March 2008, the Belgian National Cancer Plan (NCP) was launched by Mrs. L. Onkelinx, Federal Minister of Social affairs and Public Health. In order to promote translational cancer research and the collaboration between different cancer researchers in Belgium, one of the initiatives of the NCP (initiative 27) was the creation of a Belgian Virtual Tumourbank. By this initiative governmental funding was made available to create and maintain a tumourbank; so the focus has since then, has mainly been on-

cology. However, in recent years, other domains such as cardiology and hepatology are being explored and new collections created.

We try to provide researchers with high quality samples to stimulate translational research. Because we are located in an academic hospital we have access to specimens of patients with rather rare tumours, for example neuro-endocrine tumours, certain types of sarcoma and mesothelioma.

Sofie, what kind of samples are stored in your biobank and do you have statistics on reuse of your samples?

S We started in 2009 with a very strong focus on tissue samples, both fresh frozen and formalin fixed samples, which we receive due to a very close collaboration with the pathology lab of the hospital. Since 2012 we also started collecting blood and blood derivates such as serum, plasma and buffy coats of mainly oncology patients. Our collection is growing rapidly with material of more than 10.000 patients.

We monitor the use of our samples carefully and keep statistics. For now, we have a general output of 5.15%. Some sample types, such as, plasma from cancer patients harbouring tumour specific mutations, are requested more than others. We hope to achieve more visibility so more researchers can be granted access to our samples and qualitative translational research can be done.

Patrick, please tell us your thoughts about "cross boarder biobanking" in Europe, do you have experience in sharing samples within Europe?

P We are open to any national and international request for samples and both academic and commercial requests will be considered. Sharing samples on an international level will be the only way for some “rare disease studies” to be able to get enough samples for a statistically strong research project.

We have some experience with sharing samples across Europe, although the majority of projects are still from Belgium.

Mieke, which certifications does your biobank hold and does certification affect your biobank routine work? Does your biobank quality management identify performance indicators, would you share with us some examples?

M We are embedded in the UZA pathology labo and started biobanking under the wings of their ISO 15189 accreditation. With an inter-university cooperation, the Flemish Biobank was established. Based upon ISO 9001 and OECD best practices, a common quality standard was agreed upon, and a peer to peer audit was performed by all Flemish Biobanks in 2014. Sharing experiences on how to organize the biobanking processes was very interesting and we implemented many ideas and recommendations as a result of this audit.

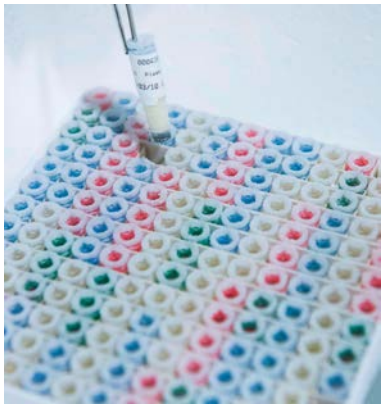
To monitor our processes, we identified performance indicators at all key branches of our process map. Some of these are easily calculated by our Lims system, such as the SPREC coding for preanalytical variation.

For others we use Microsoft SQL Server Report Builder with the help of our hospital IT support. These reports monitor the consent status of our incoming samples, tissue ischaemia time, blood products centrifugation time, coverage of samples suitable for biobanking, and the distribution of samples.

Sofie, why do you contribute to BBMRI-ERIC expert working groups, although it is not funded?

S We believe it is extremely important to be actively involved in working groups such as those from BBMRI. First of all it is very interesting to stay up to date about the rapidly evolving field of biobanking. You gather information which you can translate immediately in your own daily operations and may give your biobank a heads-up. Secondly, we believe learning from other experts in the field, sharing experiences and pitfalls and open communication is very stimulating. To know that you are not the only one encountering certain difficulties with for example establishing certain procedures in the biobank can also be reassuring. Thirdly, by contributing in these working groups the "biobanks voice" will be heard. It's important to be able to influence the field, even if it's just a little bit, from a bottom-up approach by people actually working in the field and not just top-down by policy makers.

Patrick, is there a success story you can tell about your biobank? (e.g. your samples/data lead to a bio-marker paper, innovative development with industry partners….)



P In 2014 we got involved in a research project from a PhD. student that wanted to explore the field of liquid biopsies taken from lung and pancreatic cancer patients, especially those harbouring tumour specific mutations such as EGFR and KRAS. The idea was to follow-up the tumour load of patients in blood samples taken at different time points during their disease. In this way the PhD. student hoped to be able to predict relapse, before imaging techniques could do so and/or to provide an alternative when biopsies could not be taken. She developed very sensitive digital droplet PCR based methods to detect tumour specific mutations in plasma. To further validate the in-house developed tests she needed plasma of high quality of lung –and pancreatic cancer patients. Because of our very good collaboration with the oncology centre and surgical teams, Tumorbank@UZA already had many samples that she could use. This project led to a validated and ISO 15189 accredited test in the Pathology department of UZA. This is an example of direct translation of the use of biobank samples to the clinic and patient benefit.

Your biobank in the spotlight:

- > 100.000 samples of > 10.000 patients
- Focus on oncology
- University Hospital based with strong collaborations in house
- High level IT support

Most relevant references:

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The link to your affiliation:

www.uza.be/tumorbank