

An Interdisciplinary Team



BioBank
G R A Z



Biobank Graz

An interdisciplinary team leads to success

The history of biobanking in Austria has a long tradition and is based on a royal decree from 1811 that remitted medical doctors to collect human samples. In 2007, Biobank Graz became an institutional and central research infrastructure of Medical University of Graz, Austria, which is publicly owned, a non-profit organisation and supported by public funding. Today, Biobank Graz is the **largest academic biobank in Europe** providing logistics and infrastructure and offering optimal support for research teams in collecting, processing, storing and providing human biological samples and associated data. Additionally, Biobank Graz offers analysis of requested biospecimens as a service for customers in cooperation with the **Centre for Medical Research (ZMF)** at Medical University of Graz. Special attention is given to sample and data quality and to the protection of individual rights of donors.

Providing these services on a high quality level, Biobank Graz pays particular attention to the recruitment of staff with different professions. Today, the interdisciplinary team of Biobank Graz guarantees professional services on all biobanking topics.

The management team pushes Biobank Graz to be the largest in Europe.

The CEO, the COO and the CQO represent the leading team of Biobank Graz. The **CEO and director Prof. Berthold Huppertz, PhD** is responsible for professional management of the largest Biobank in Europe. He represents Biobank Graz towards stakeholders, both within the Medical University of Graz as well as nationally and internationally.

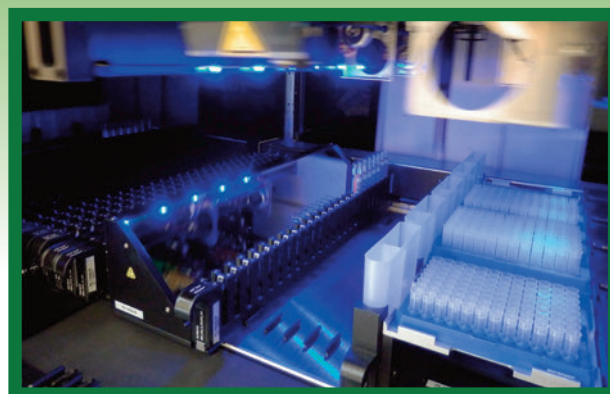
Together with his team he develops a strategic plan every 3 years including 5 critical success factors. The leading team and all members of Biobank Graz are responsible to discuss this strategy to improve the quality of all services. Prof. Huppertz as well as **Vr.-Ped. Karine Sargsyan, COO**, represent Biobank Graz in national and international networks and the research landscape, especially in central eastern European countries. Vr.-Ped. Sargsyan is further responsible for the organisational management of Biobank Graz. In 2007 only 2 employees were responsible for the running of Biobank Graz, now, due to a steady increase in project requests of both national and international partners, more than 30 employees representing 18 full-time equivalents are working for the largest Biobank in Europe. The leading team of Biobank Graz is responsible for furthering development research and infrastructure projects by guaranteeing optimal support for cooperation partners. Optimal support can only be provided by high quality services and products. High quality is maintained using a professional quality management system (QM-system). Under the responsibility of the **CQO Dr. Michaela Bayer**, Biobank Graz operates a QM-system according to **ISO 9001:2008** offering highly sophisticated services for processing and storing samples as well as handling data. Dr. Bayer is responsible for developing, operating, monitoring and propagating the QM-system. All work processes during the handling and storage of samples are based on standard operating procedures (**SOPs**). To enable access of these documents to all staff members, Dr. Bayer oversees the document control system and updates documents if needed, guaranteeing that all authorised employees have access to the latest up-to-date documents.



Medical technicians are responsible for high sample quality and diversity.

Biobank Graz comprises **more than 7 million samples** including liquid body fluids and tissue samples. The handling of this huge amount of samples and the respective data is managed by a team of 8 medical technicians (4.75 full-time equivalents).

Tissue samples are mostly collected at the Institute of Pathology of Medical University of Graz. Via routine diagnostic processes formalin-fixed paraffin-embedded (FFPE) samples, fresh frozen tissues and tissue slide samples enter Biobank Graz, where **FFPE samples of the last 30 years** can be found. Liquid as well as fresh frozen tissue samples are collected based on specific cooperation agreements with different clinics or departments of LKH-University Hospital Graz. Each year, Biobank Graz registers about 5,000 incoming cryo samples, about 100,000 aliquots of liquid body fluid samples and about 150,000 FFPE and slide samples. To handle these samples and to guarantee high quality standards, working processes are automated helping to support the team and improve their working conditions. An excellent example is **the handling of liquid samples, which is fully automated** starting with scanning the primary tube, communicating with the laboratory information system, taking a picture, recognising the phases of the different blood components, processing the samples and freezing them immediately at -20°C –

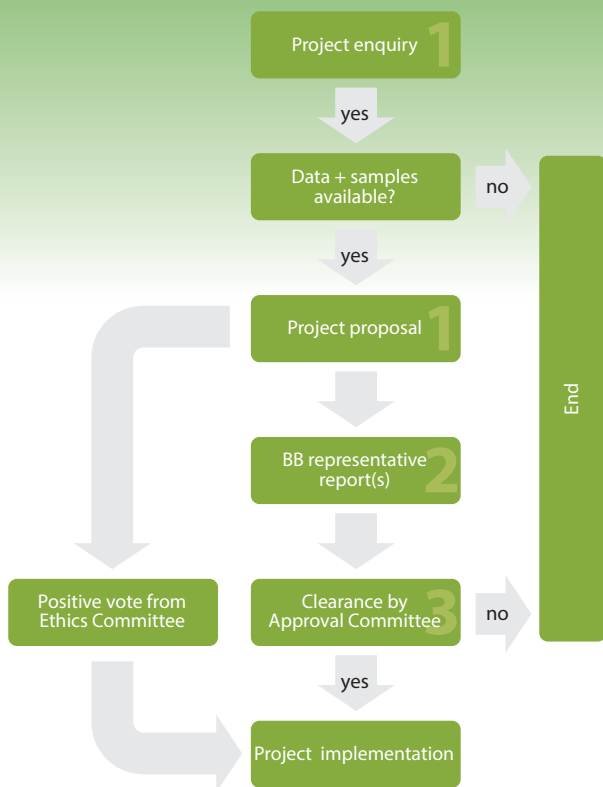


all of which is performed by liquid handling robots. Final storage of these samples is performed at -80°C .

Beside frozen tissue and liquid samples, more than 6 million FFPE blocks and about 10 million tissue slides are kept in Biobank Graz. Recently, the respective storage system for samples at room temperature underwent an innovative development. A **semi-automated storage system for FFPE samples and slides** has been developed in cooperation with a logistics company and has been implemented – replacing the time consuming manual handling of incoming and outgoing FFPE samples. 2 archivists and 4 part time employed students are responsible for accurate processing of incoming and outgoing blocks and slides to guarantee professional project management.

Handling these highly sophisticated machines and robots makes it necessary that the whole team of technicians is trained not only in laboratory skills but also needs to be familiar with operating the technical equipment.

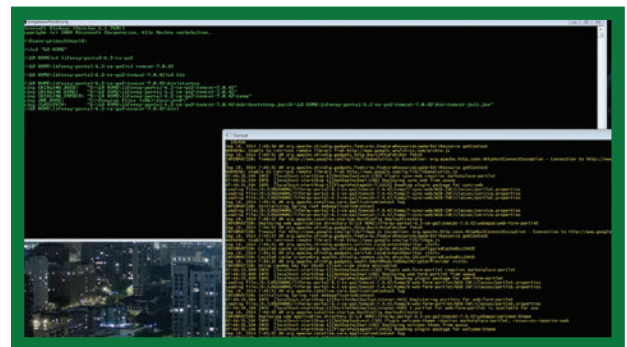
Project handling



Project managers are responsible for sample management and ethical aspects.

Biobank Graz provides biological samples for private as well as academic research partners. To allocate these samples for different cooperation partners, 2 project managers are responsible for coordinated sample and data retrieval and export. As soon as a project request enters, the first step is to verify whether Biobank Graz can provide the samples and according data asked for. Given that samples and data are available the project managers have to examine whether the donors of the samples have signed an informed consent. Biobank Graz gives **top priority to the protection of privacy of sample donors**. All samples are automatically encoded when data is entered into the database and project managers are only allowed to disclose the sample code to research partners. Furthermore, the project managers are responsible to the accuracy of project application, which has to have valid ethical approval. Only when ethical and legal issues are fulfilled can samples and data be provided to the cooperation partners.

Project managers are also key in discussions with cooperation partners to develop new strategies for prospective sample collections. Here, the combined know-how of the 2 project managers as medical doctor and scientist is essential to represent professional contact personnel for all cooperation partners.



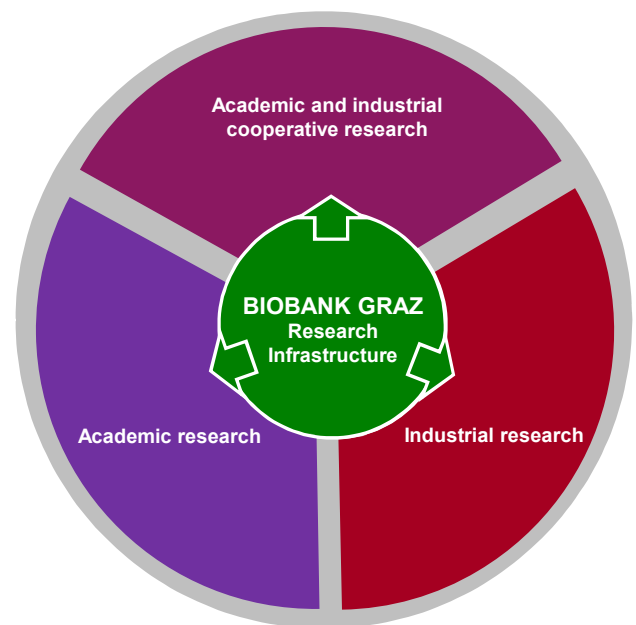
The IT-team is needed for professional documentation.

The huge amount of samples and associated data stored at Biobank Graz has to be managed within an IT infrastructure. Each incoming and outgoing sample has to be documented in specific databases. Beside a **unique sample identification number**, sample associated data like time stamps, aliquot volume or sample location as well as non-personal data such as age, sex or primary diagnosis have to be saved and recallable. Today, the IT team consists of 5 people and has become an indispensable part of Biobank Graz. An interdisciplinary biobank is a highly dynamic environment from the software point of view. Not only does state-of-the-art hardware and software technology change dynamically, also software requirements, working processes, data sources, sample types etc. change on a regular basis. To face current as well as future needs of biobanking in information technology it is essential to establish an entire software environment that is highly flexible and easy to use. Administration, development and maintenance of the existing as well as new IT systems are the main responsibilities of the IT team.

The office team is the hub for internal and external enquiries.

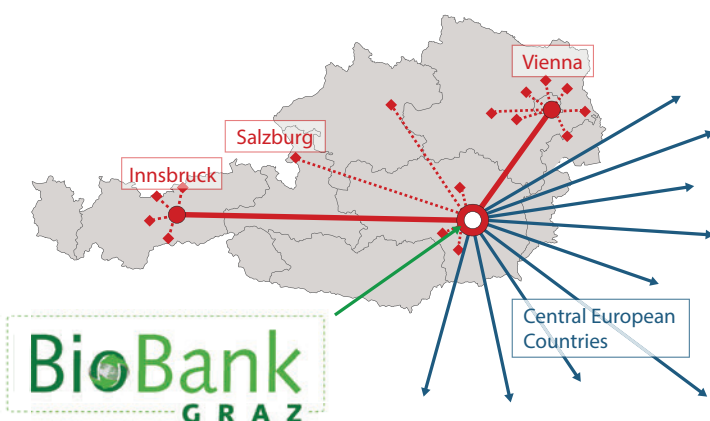
Three young ladies represent the team of the Biobank Graz office which is open Monday to Friday from 8am to 4pm. Beside common administrative duties like email correspondence or telephone calls, it is in their responsibility to coordinate project requests and forward them to the project managers in a certain timeframe to guarantee an efficient working process.

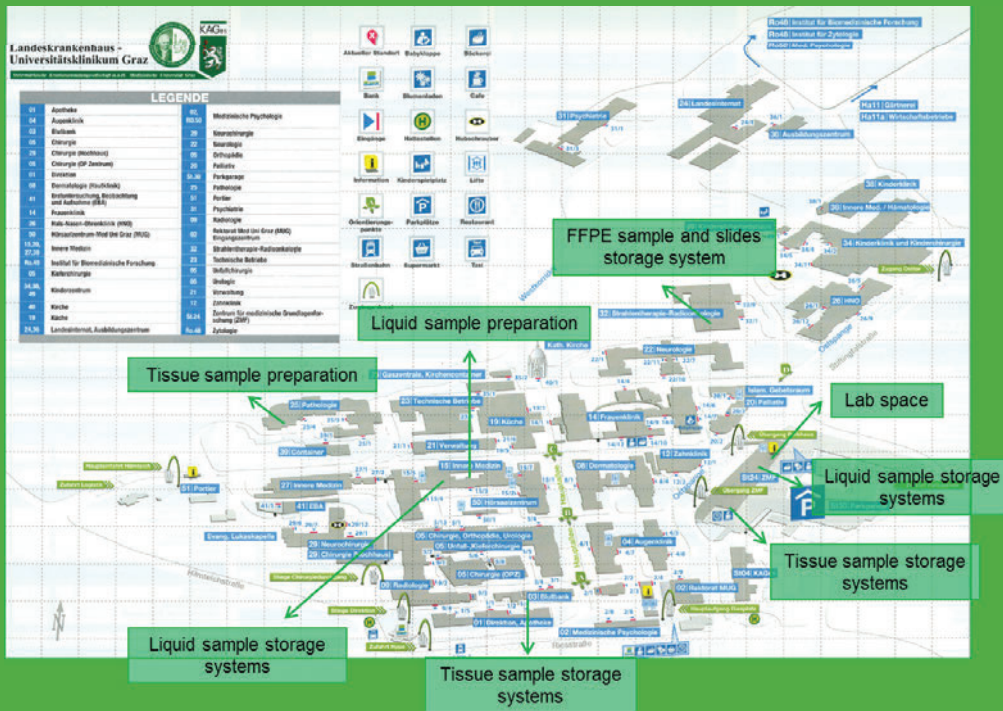
To ensure excellent communication within Biobank Graz **recurring jour fixes** are organised where the secretaries write protocols for documentation, as is required in the QM-system. They are involved in human resource management especially noting sick leave, holidays and days off for staff members. Furthermore, they organise business travels, hearings, orders, meetings and appointments with cooperation partners. The office team manages the entire infrastructure housing as well as the inventory of new infrastructure. To keep Biobank running smoothly it is essential to use the services organised by the secretaries, of course in agreement with the leading team and the responsible personnel.



Academic consultants are responsible for national and international cooperations.

Four academic consultants support the leading team in administrative processes, especially in the reporting systems. This team consists of 2 health care managers, 1 medical scientist and 1 molecular biologist. The responsibility for further **development and improvement of quality standards** stands in the power of the leading team together with the academic consultants. Furthermore, **public relations**, cost calculation and correspondence with cooperation partners, as well as the creation of new sample collection strategies are part of the working processes of the academic consultants.





Beside the in-house cooperation within the Medical University of Graz, Biobank Graz is an **active leading player in (inter-)national projects and activities** aiming to improve interactions and cooperation between biobanks and scientists. Coordination, consolidation and networking of existing European biobanks for further development of biomedical sciences are central issues for Biobank Graz, partly managed by the team of academic consultants. An important biobanking network within Europe started in January 2014 with its headquarters next to the offices of Biobank Graz: **BBMRI-ERIC**, the European biobanking research infrastructure. The Austrian hub of this network, **BBMRI.AT**, also has its headquarters next to Biobank Graz.

As an example, 2013 a project with 2 Balkan countries (Albania and Kosovo) funded by ZSI (Zentrum für Soziale Innovation) and ADA (Austrian Development Agency) was initiated. The aim of this project was to provide consultancy for the initiation of Biobanks in Tirana and Pristina strengthening the research sector there. In 3 workshops the strengths, weaknesses, opportunities and risks in biobanking were defined and displayed in a SWOT-analysis, guided by the team of Biobank Graz. Adapted from this, a strategy for the development of biobanks was generated. In this process particularly all technical requirements, operational and organisational adaptations were considered.



Austrian research will benefit from this international collaboration, especially for research on biomarkers exploring complex diseases where large-scale studies with a high number of samples are needed. Furthermore, internationally collaborating biobanks enable studies in which samples of rare diseases or different ethnicities are required. In this manner, findings about inheritance factors, risk factors and environmental factors contributing to disease development can be gained and the next steps for disease prevention and health politics can be achieved.

The interdisciplinary team is moving closer together.

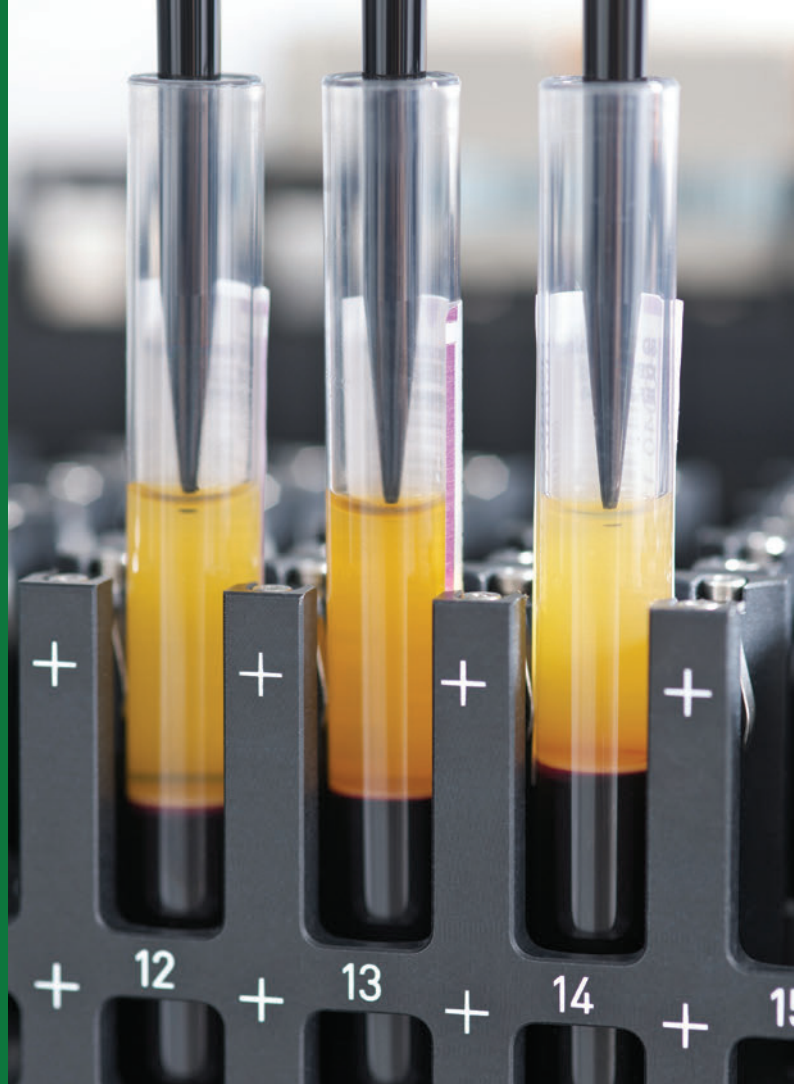
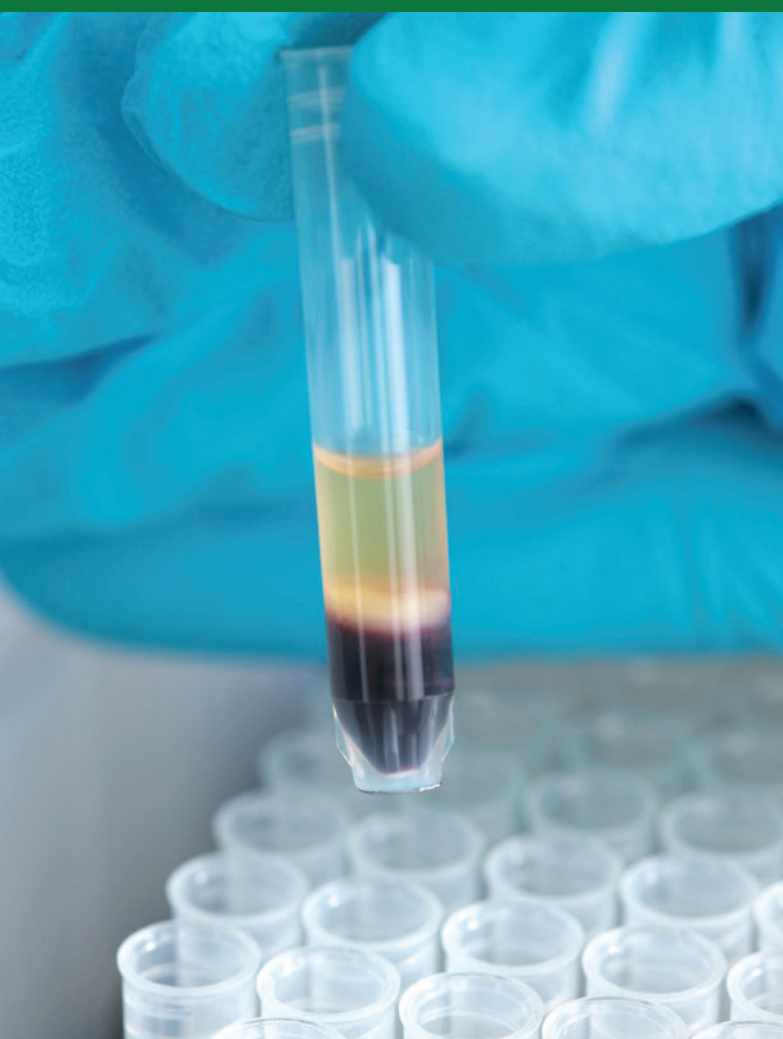
At the moment, Biobank Graz personnel and their working spaces are spread over the whole campus of the LKH-University Hospital Graz. To improve communication and networking within Biobank Graz, all divisions will now move to a new building named ZWT (**Center for Knowledge and Technology Transfer in Medicine**). The ZWT is an ideal place for networking between research groups and companies and is the first stage of the Medical Campus that will eventually house research and teaching of the Medical University of Graz.

In May 2014, Biobank Graz started to move into the new ZWT building, offering nearly 1200m² for offices, laboratory space as well as storage rooms. Offices and lab space are now in place, while the transfer of all samples and storage systems will be complete by the end of 2017. The main advantage of this new building is that nearly all Biobank Graz divisions will be located under one roof. Networking within Biobank Graz has already become easier and more efficient.

The interdisciplinary team of Biobank Graz pursues the vision of the biobank:

“Leader in Biobanking as Hub for Cooperative Medical Research”.

(Designed and written by: Dr. Manuela Strahlhofer-Augsten, PhD, and Petra Story, MA)



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