The mission of Biobank Graz as a central facility of the Medical University of Graz (MUG) is to support research and development of improvements in diagnosis, monitoring and treatment. The contribution to an advanced and sustained healthcare for the general population is the main goal of this publicly owned non-profit organisation.

Biobank Graz provides the logistics and infrastructure to optimally support research teams/projects inside and outside MUG in the collection, processing and storage of biological samples and their associated data. Special attention is given to sample and data quality, ethics and to the protection of the individual rights of patients.

Sample acquisition

Samples from selected patients and donors at the LKH-University Hospital Graz, who have signed an informed consent, are deposited in the Biobank Graz. Blood and tissue samples are harvested during routine interventions undertaken by different departments and divisions of the university hospital and offered for use in research projects only after completion of all laboratory and histopathological analyses necessary for the patients.

Biobank Graz pursues a quality management system according to ISO 9001:2008 and offers the following services regarding handling and storage of biological samples and handling of data:

- Consistently high sample quality by using standardised methods and protocols (SOPs);
- Efficient use of resources through the building of shared infrastructure and the development of optimised processes;
- A high degree of reliability provided by the storage of samples in 24/7 monitored storage systems;
- Processing and storage of all data in accordance with data protection legislations.

Sample collection and storage

Biobank Graz currently contains more than five million samples representing a non-selected patient group characteristic of central Europe. Tissue samples are stored as cryo material in the gas phase of liquid nitrogen (-120°C to -180°C) or as FFPE samples embedded in paraffin at room temperature. Blood samples and other body fluids are stored at -80°C.

Biobank Graz includes:

- A cross sectional biobank containing essentially unselected pathological samples and clinical data from the Styrian population, representing all detected diseases at their natural frequency at the university hospital;
- A disease focused clinical biobank providing different types of human biological samples of the highest quality and with detailed clinical follow-up data during the whole course of diseases, including long-term observation for specifically selected diseases and targeted disease groups.

These features provide ideal opportunities for epidemiological studies and allow the validation of biomarkers for the identification of specific diseases and determination of their response to treatment.

Due to the interdisciplinary cooperation with several different departments, clinics and institutes it is possible to collect large numbers of samples and their data on a high quality level. At the moment nine institutions of the University Hospital are cooperation partners of the Biobank Graz, and more cooperation agreements are in preparation.

IT-infrastructure and data protection policy

High amounts of samples mean a high mass of data. To manage the biological samples a special software, designed by Joanneum...
Research Graz, named BioSample Pro, is used. For data security reasons, Biobank Graz keeps all clinical data within the routine clinical databases and IT subsystems of the university hospital. Biobank Graz gives top priority to the protection of the privacy of sample donors. All samples are automatically encoded when data are entered into the database and only the sample code is disclosed to researchers.

The use of data and samples is restricted to ethically and scientifically approved research projects. Biobank Graz has been approved by the local ethics committee and by the official Austrian data regulatory board (DVR). A comprehensive data protection policy has been developed and implemented to protect the privacy of sample donors. A specific informed consent of the Biobank Graz has been established by an iterative process. Biobank Graz is regularly reviewed by an international evaluation and advisory board.

National and international research
As a central service facility of the Medical University of Graz, Biobank Graz supports basic, translational and industrial research. In recent years, a large number of research projects and clinical trials have been carried out using samples, data and/or logistic services of the Biobank Graz. Biobank Graz is involved as a scientific partner in a growing number of projects.

Biobank Graz considers itself as a research partner and not a sample provider. The goal is to provide answers to the customers’ questions by combining:
- The well-established clinical experience of the university hospital (clinical expertise);
- The unique technology platforms at the Centre for Medical Research (technology advantages);
- The largest biobank in Europe (Biobank Graz, Service advantages).

Biobank Graz is an active and leading player in international projects and activities aimed at improving interactions between and cooperation amongst biobanks.

A key goal of the 7th Framework Programme of the European Union is the coordinated development of research infrastructures in Europe. One project in the area of ‘Biological and Medical Sciences’, targeted the establishment of a pan-European network of biobanks and biomolecular resource centres, their innovative further development and sustainable financing.

The European coordination of this EU-infrastructure project Biobanking and Biomolecular Resources Research Infrastructure (BBMRI) is performed by Professor Kurt Zatloukal (Institute of Pathology, MUG). Furthermore, a government–industry financed large research project named Biomarkers for Personalized Medicine for common metabolic disorders (BioPersMed) is based on the Biobank Graz infrastructure, and opens a new study center for specific cohorts.

Biobank Graz represents a hub for national and international scientific network and thus can revolutionise the handling of human health.

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