



Biobank Graz
Leader in Biobanking



Medical University of Graz

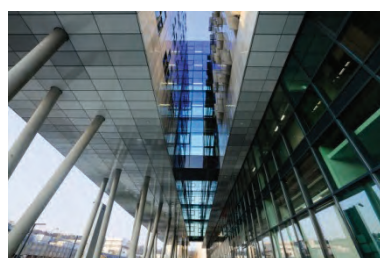


Biobank Graz: The Facts

- (One of) the largest academic biobanks in Europe
- Research Biobank of the Year (ESBB, 2014)



- Founded in 2007
- Publicly owned non-profit biobank, supported by the Austrian federal government and the local Styrian government
- Central research infrastructure of Medical University of Graz, Austria
- Located at the newly built Center for Knowledge and Technology Transfer in Medicine (ZWT)

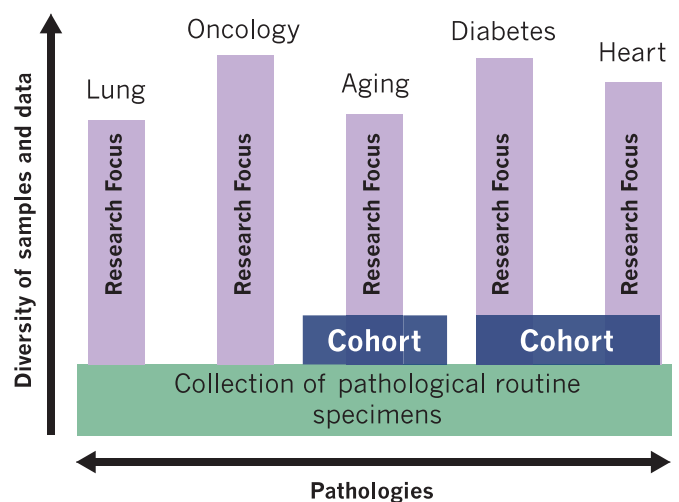


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- Certified according to ISO 9001:2008

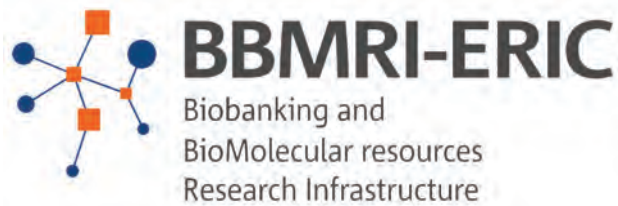


- Contains more than 7.5 million human biological samples, including:
 - Formalin fixed, paraffin embedded (FFPE) tissues
 - Fresh frozen tissues
 - A variety of fluid samples: blood, serum, plasma, buffy coat, urine, saliva, cerebral spinal fluid, synovial fluid, follicular fluid and seminal fluid
 - Associated clinical data, even follow-up clinical data of donors are available.
- Includes a cross-sectional biobank (with FFPE samples of the last 30 years)
- Includes a disease-focused clinical biobank
- Collects, processes, stores and distributes human biological samples and clinical data
- Offers services and samples/data for academic, industrial and cooperative research
- Database systems in accordance with data protection policies and legislation protecting donor rights



Biobank Graz: The Facts

- Actively integrated into biobanking networks and societies:
 - **BBMRI-ERIC** – Biobanking and Biomolecular Resources Research Infrastructures – European Research Infrastructure Consortium
 - **BBMRI.at** – The Austrian hub of BBMRI
 - **ISBER** – International Society for Biological and Environmental Repositories
 - **ESBB** – European, Middle Eastern and African Society for Biopreservation and Biobanking



Biobank Graz: The Goals

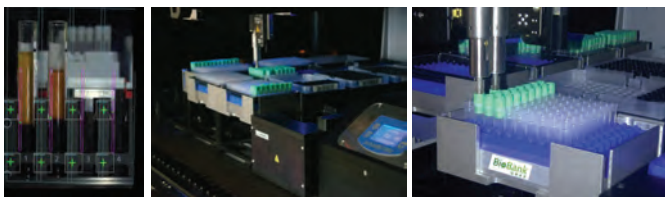
- Integration of existing and future collection initiatives into an interdisciplinary biobank for a cooperative and competitive use of resources
- Support of cooperative research between academic and private/industrial partners to foster the development of biomarkers and the improvement of diagnostics and therapies
- Ensuring that operations of Biobank Graz database systems are in accordance with changing data protection regulations and legislation
- Adjustment of the implemented Biobank Graz quality standards for sample/data collection to ensure highest quality
- Development of an Expert Center in Graz for the analysis of samples to foster public-private-partnership (PPP), combining on site technological platforms of the Medical University of Graz (Center for Medical Research – ZMF, and Center for Biomedical Research) and CBmed, the Center for Biomarker Research in Medicine

Biobank Graz: Sample Quality

Biomedical research is progressing rapidly, forcing the structured collection of high quality human biological samples and corresponding data. To optimize sample management and maintain sample quality, Biobank Graz has implemented automation processes:

1. Handling of liquid samples

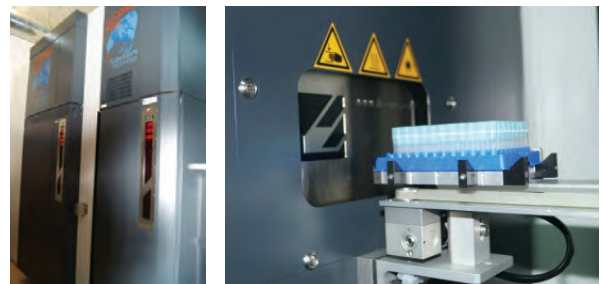
A fully automated robot to process liquid samples has been custom-designed for Biobank Graz and thus is a unique robot worldwide. Starting from entering primary tubes, it only takes a few minutes until aliquots are taken and frozen on the deck of the robot, even on a single tube level. This automation system will revolutionize liquid handling and the maintenance of sample quality.



HAMILTON

2. Storage of liquid samples

Fully automated storage systems at minus 80° C with single tube picking of single samples first at minus 20°C and now at minus 80° C have replaced manual storage of liquid samples in freezers. Each sample vial displays a unique 2D data matrix code and is scanned repeatedly during the collection process. This process will revolutionize documentation and quality levels of frozen liquid samples.



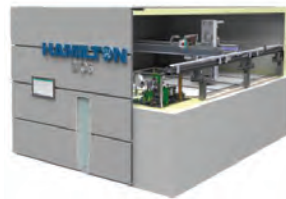
LiCONiC
INSTRUMENTS

3. Storage of fresh frozen tissue samples

A semi-automated cryo-storage system without interruption of the cold chain during handling represents a new standard to maintain sample quality.

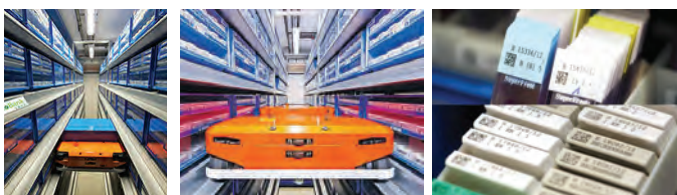


ASKION
engineering • production • service



4. Storage of FFPE tissue samples

A semi-automated storage system for FFPE samples has replaced manual handling of incoming and outgoing FFPE tissue blocks and slides. Each sample is labelled with a 2D Data Matrix code and scanned during the storage process. This process will revolutionize retrieval rates in FFPE archives.



YLOG

HAMILTON
STORAGE TECHNOLOGIES



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Biobank Graz: Research Services

Services provided

- Distribution of samples and data to academic, industrial and cooperative research partners
- Project development and coordination
- Preparation of derivatives (e.g. nucleic acid extraction, etc.)
- Pre-processing and clearing of data
- Support in ethical applications
- Prospective sample collection; set up and realization of prospective study cohorts
- Contact to and networking with other biobanks
- Integration of pre-existing and newly initiated collections into Biobank Graz
- Support for the installation of new biobanks
- Information for respective personnel groups (advanced and continued education)
- Consulting and training (eg. ethical, technical and organizational aspects of biobanking)

Workshop:

HOW TO BUILD A BIOBANK – LEARNING BY DOING

(Sept. 16th to 18th, 2015)

AT MEDICAL UNIVERSITY OF GRAZ



Further analysis offered

The goal of Biobank Graz is not only to transfer samples outside the university. Instead, development of an Expert Center on a PPP-basis to perform on-site analysis is planned to reach the following goals:

- Protection of sample quality and security (no shipment of samples needed)
- Minimal sample consumption
- Comparability and standardization of analyses
- Use of analysis data in different studies
- Cost-minimization

Development of the Expert Center is achieved by collaboration of Medical University of Graz (Center for Medical Research – ZMF, and Center for Biomedical Research) with CBmed.



The Center for Medical Research (ZMF) and the Center for Biomedical Research at Medical University of Graz offer the following technology platforms in their core facilities:

- Imaging
- Mass Spectrometry
- Ultrastructure Analysis
- Computational Bioanalytics
- Molecular Biology
- Clinical Research Center
- Alternative Biomodels and Preclinical Imaging
- Experimental Biomodels

Biobank Graz: ELSI (Ethical, Legal and Social Implications)

Biobank Graz supports basic, translational and clinical 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 Biobank Graz.

The use of clinical data and specimens from Biobank Graz is restricted to ethically and scientifically approved research projects. Hence, sample requests need to be ethically approved before research projects can use specimens from participants who have donated their samples to Biobank Graz.

The public image of a biobank is based on the commitment of a biobank to present itself in a transparent way, especially explaining for what purpose samples and data will be used.

Biobank Graz collects, stores and distributes samples for biomedical research only. Hence, at Biobank Graz the interplay between donors and researchers plays an important role to carefully explain this sophisticated system and its benefit for the public health care system.

Funding:

Due to the significant support of the Austrian Federal Ministry of Science, Research and Economy (Konjunkturpaket II) as well as the Local Government of Styria (Zukunftsfonds Steiermark) it was and is possible to further develop and improve the infrastructure and resources of Biobank Graz to lead the way in the field of biobanking. Biobank Graz is a member of BBMRI.at and funded by GZ 10.470/0016-II/3/2013.



Further analysis offered

CBmed, the Center for Biomarker Research in Medicine, offers the following technology platforms in its core labs:

- Metabolomics
- Genetics & Genomics
- Immunology
- Digital Pathology



Biobank Graz: Advantages

Biobank Graz considers itself as a research partner and not a simple sample provider. The goal of Biobank Graz is to provide the best infrastructure combined with high quality samples and data to our customers by combining:

● Clinical Advantages:

The well-established clinical expertise of the University Hospital Graz

● Technology Advantages:

The unique technology platforms on site
- at the Center for Medical Research (ZMF) and the Center for Biomedical Research of the Medical University of Graz
- at our partner CBmed, the Center for Biomarker Research in Medicine

● Service Advantages:

The largest Biobank in Europe, Biobank Graz
"All in one" service (Biobank and Expert Center)

“ The goal of Biobank Graz is to provide the best infrastructure combined with high quality samples and data to our customers ”



Year
 Samples
 Storage
 Generation
 Harmonization
 Automation
 Projects
 Clinical
 Next
 Graz
 Biobank
 Data
 Biobanking
 Paraffin
 Systems
 ISO
 Systems
 Handling
 Networks
 Innovation
 Core facility
 Net
 ISBER
 Cryo
 Liquid
 9001:2008
 Certification
 Longitudinal
 Fluids
 BBMRI-ERIC
 BBMRI-atesBB



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