



# BIOBANK GRAZ

INNOVATIVE BIOMEDICAL  
RESEARCH HUB





# OUR MISSION AND VISION

**Biobank Graz** is a division of the **Medical University of Graz**. We provide logistics and infrastructure for the collection and storage of **high quality biological material**, while **protecting the personal rights of sample donors**.

Our services aim at **fostering** medically relevant **research discoveries** for **improved diagnosis and treatment** in patient care.

## Trusted Partner for Patients & Scientific Community

Transparent and ethically approved use of donors specimens in research

## Project Development & Coordination

Support for scientists during all phases of their research studies

## Core Activities

### State-of-the-Art Collection & Storage

Centralized automated handling and storing of samples

### Access to Samples & Data

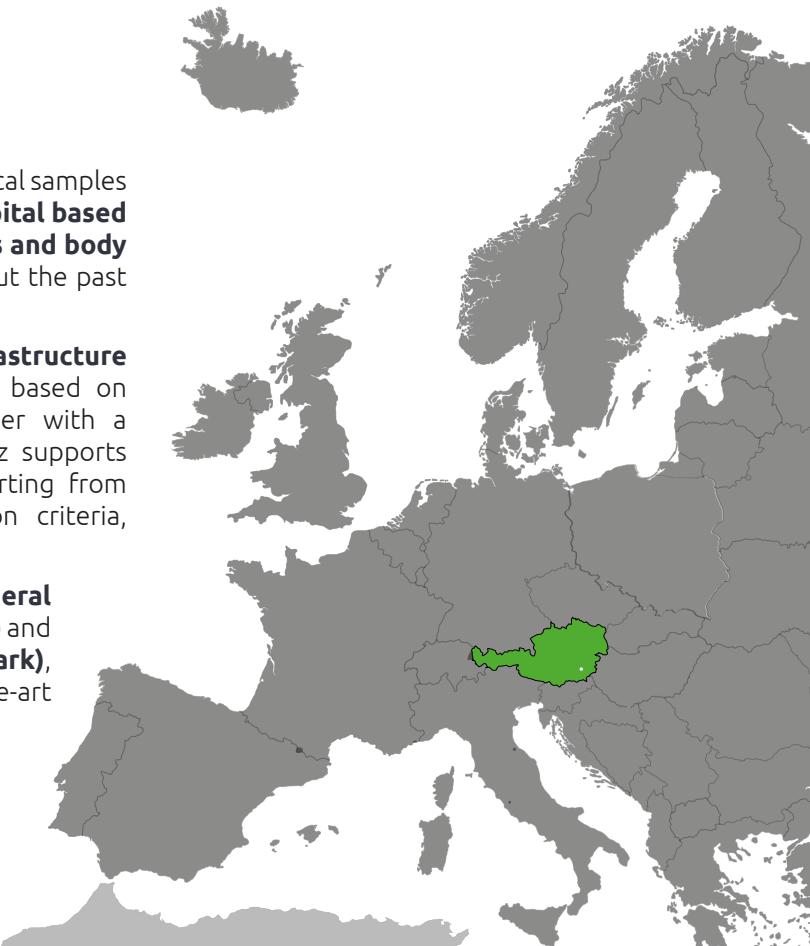
Fostering innovations for improved healthcare

# ABOUT US

The core asset of **Biobank Graz** is a large collection of biological samples and associated data. Biobank Graz is **one of the largest hospital based biobanks in Europe** – comprising millions of **tissue samples and body fluids** (e.g. blood and derivatives, urine) collected throughout the past three decades.

Biobank Graz provides **state-of-the-art logistics and infrastructure** enabling the prospective collection of samples and data based on the specific needs of our cooperation partners. Together with a **multidisciplinary team of medical experts** Biobank Graz supports researchers at all steps of their scientific workflow – starting from study design, definition of optimal inclusion & exclusion criteria, implementation of pre-analytical standards, etc.

With significant financial support of the **Austrian Federal Government of Science and Research (Konjunkturpaket II)** and the **Local Government of Styria (Zukunftsfoonds Steiermark)**, Biobank Graz implemented and developed state-of-the-art infrastructure.



Bundesministerium  
Bildung, Wissenschaft  
und Forschung





## ACQUISITION AND PROCESSING

Samples from selected patients and donors at the LKH-Universitätsklinikum Graz (University Hospital of Graz), who have signed an **informed consent** declaration, are deposited in Biobank Graz. Samples are either collected in course of **routine interventions** (e.g. left-over tissue and blood samples, no longer needed for clinical patient care/diagnostics) or in context of specific (clinical) studies.

Tissue biospecimen are either **snap frozen** or **formalin-fixed and embedded in paraffin**. In the first case, our trained medical technicians process the tissues as quickly as possible in order to avoid any pre-analytical degradation. FFPE tissues are processed at the Institute of Pathology according to **standardized operation procedures (SOPs)** and fixed parameters. **Biological fluids** (blood, urine, etc.) are handled and aliquoted by a **fully automated robot** system and are immediately cooled down to -20°C before being transferred to -80°C for long-term storage.

Biobank Graz operates a quality management system according to **ISO 9001:2015**. As part of this certification, the samples are processed, stored and documented according to **SOPs**. Some collections are conform to **CEN/TS requirements**.

See BBMRI.at Austrian Biobank Catalogue:  
<http://catalog.bbmri.at>

# BIOSPECIMEN COLLECTION

## Healthy Control

- ▶ Citizens of Graz - Healthy aging study
- ▶ Healthy control

## Orthopedics

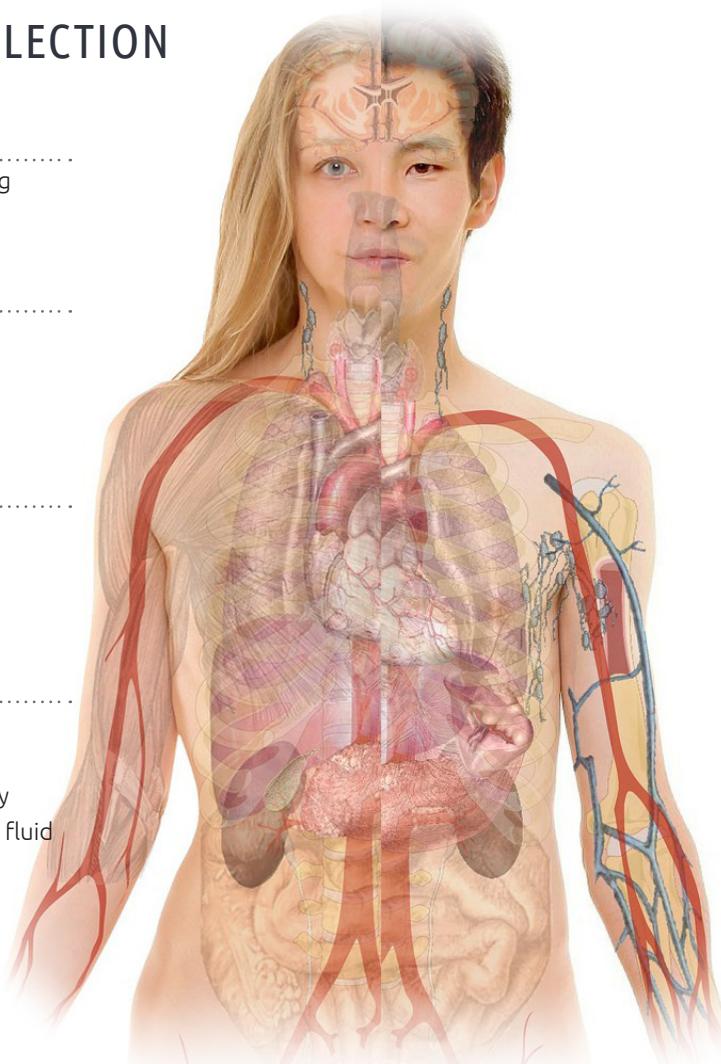
- ▶ Osteosarcoma
- ▶ Cartilage
- ▶ Bone/Soft tissue tumors
- ▶ Other bone diseases

## Dermatology

- ▶ Psoriasis
- ▶ Fibrosis of skin
- ▶ Scar conditions
- ▶ Other skin diseases

## Gynecology

- ▶ Disorders of cervix uteri
- ▶ Pre-eclampsia
- ▶ Diabetes mellitus in pregnancy
- ▶ In vitro Fertilization - Follicular fluid
- ▶ Placenta disorders



## Oncology and Hematology

- ▶ Head and Neck
  - ▶ Mamma
  - ▶ Prostate
  - ▶ Colorectal
- ▶ Gynecological
  - ▶ Leukemia
- ▶ Others (pancreas, esophagus,...)

## Cardiology

- ▶ Ischemic heart diseases
  - ▶ Hypertension
- ▶ Other heart diseases

## Pulmonology

- ▶ COPD/Asthma
- ▶ Other pulmonary diseases

## Endocrinology

- ▶ Diabetes mellitus
  - ▶ Morbid obesity
- ▶ Rheumatic diseases
- ▶ PCO – Polycystic ovarian disease
  - ▶ Osteoporosis



## SAMPLE STORAGE

To optimize sample management - including documentation of pre-analytic procedures - and to maintain samples at highest **quality**, Biobank Graz has implemented **automated** processes and traceable storage resources.

- ▶ **Snap frozen tissue** samples are stored in the vapor phase of liquid nitrogen ( $-140^{\circ}\text{C}$  to  $-160^{\circ}\text{C}$ ). The temperatures are supervised 24/7 and recorded for quality traceability.
- ▶ Paraffin-embedded tissues (**FFPE**) and related slides are stored at room temperature. Since 2012 samples have been labelled with 2D Data Matrix codes.
- ▶ **Blood samples** and other **body fluids** are stored in fully automated storage system at  $-80^{\circ}\text{C}$  with single tube picking assisted by 2D Data Matrix codes.

# ETHICAL, LEGAL & SOCIAL ISSUES

The use of data and samples is restricted to ethically and scientifically approved research projects. Biobank Graz is approved by the local Ethics Committee and by the official Austrian data regulatory board (DVR). A **comprehensive data protection policy** according to General Data Protection Regulation (GDPR) is implemented to protect the **privacy of donors**. Besides, all samples are automatically **encoded** when data are entered into the database and only a sample code is disclosed to approved users.

## INFORMED CONSENT

Biobank Graz has developed an informed consent procedure that covers the demands of modern medical research. All interested parties and the local Ethics Committee were involved in the development process. The Biobank Graz informed consent is in line with the recommendations of existing international guidelines (e.g. GDPR, OECD Guidelines for BRC) and approved by the Ethics Committee of the Medical University of Graz.



# BIOBANK SERVICES

- ▶ Project development and project coordination
  - ▶ Provision of retrospective samples and data
  - ▶ Planning and realization of prospective study cohorts
  - ▶ Preparation of derivatives (e.g. nucleic acid isolation)
- ▶ Integration of pre-existing collections into Biobank Graz
- ▶ Contact to and networking with other biobanks and the Austrian biobank node, BBMRI.at



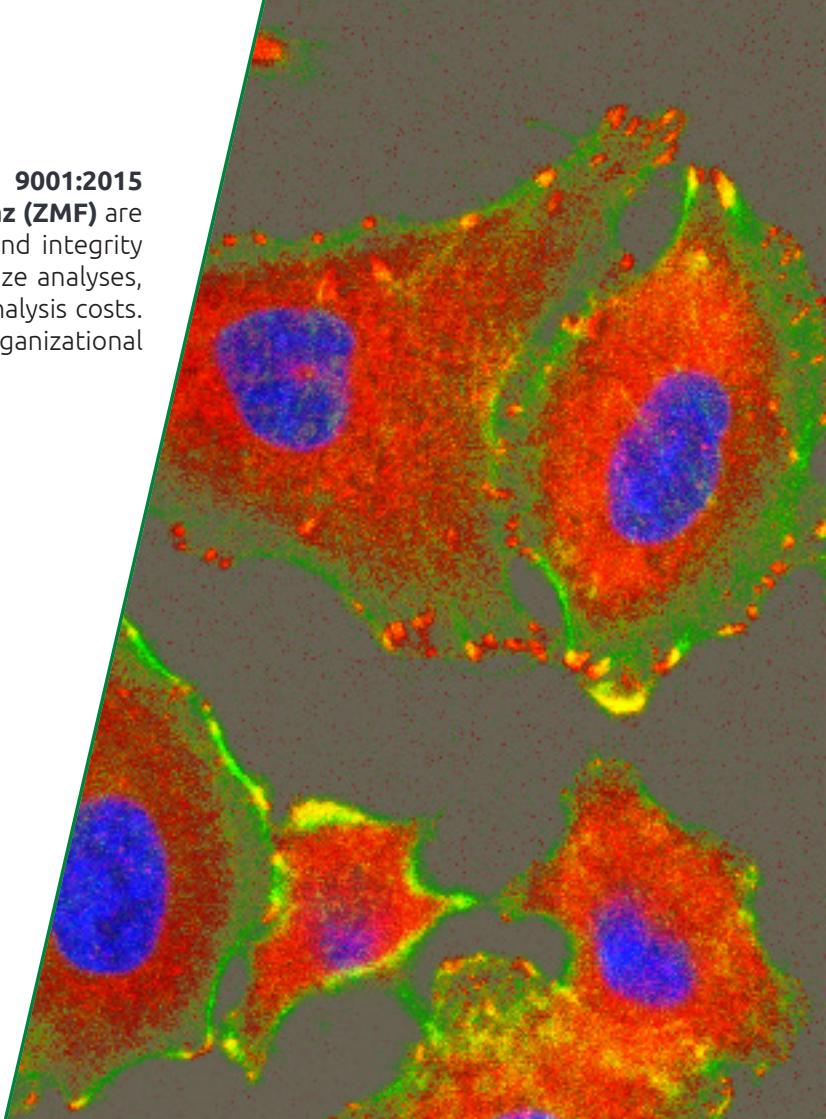
# SAMPLE ANALYSIS

For **analysis of any biospecimen**, the associated **ISO 9001:2015 certified Core Facilities of the Medical University of Graz (ZMF)** are preferred partners. It is intended to protect the quality and integrity of samples (avoid risks during sample transport), standardize analyses, integrate downstream data analysis and thus minimizing analysis costs. The services of the following Core Facilities (CF) of the Organizational Unit for Research Infrastructure are available:

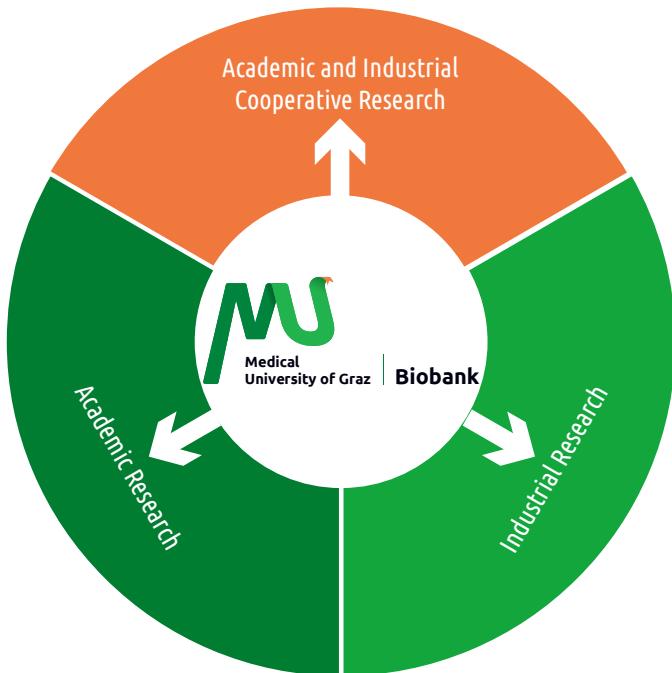
- ▶ CF Molecular Biology
- ▶ CF Computational Bioanalytics
- ▶ CF Imaging
- ▶ CF Mass Spectrometry
- ▶ CF Ultrastructure Analysis
- ▶ CF Clinical Research Center
- ▶ CF Experimental Biomodels
- ▶ CF Alternative Biomodels and Preclinical Imaging

For more information:

<https://zmf.medunigraz.at/core-facilities>



# SCIENTIFIC OUTCOMES



Biobank Graz has been specifically designed to support the needs of biomedical research in the fields of human disease, drug discovery and public health.

By delivering high quality services, samples and data, biobanks and their infrastructure hold key resources to:

- ▶ **Understand** gene-environment/lifestyle interactions
- ▶ **Unravel** the molecular basis of disease subtypes and enable personalised medicine
- ▶ **Develop** biomarkers
- ▶ **Identify** new therapeutic targets
- ▶ **Boost** developments in drug discovery

To achieve these objectives, Biobank Graz supports **academic and industrial research** by providing encoded biological material and anonymised data for reliable biomedical research. Our services facilitate the faster and target-oriented development of **better diagnostic and therapeutic approaches** for a variety of syndromes and disease patterns.

# NATIONAL & INTERNATIONAL ACTIVITIES

Biobank Graz is an active player in (inter-) national projects and activities aiming to improve interactions and cooperation in the biobanking society.

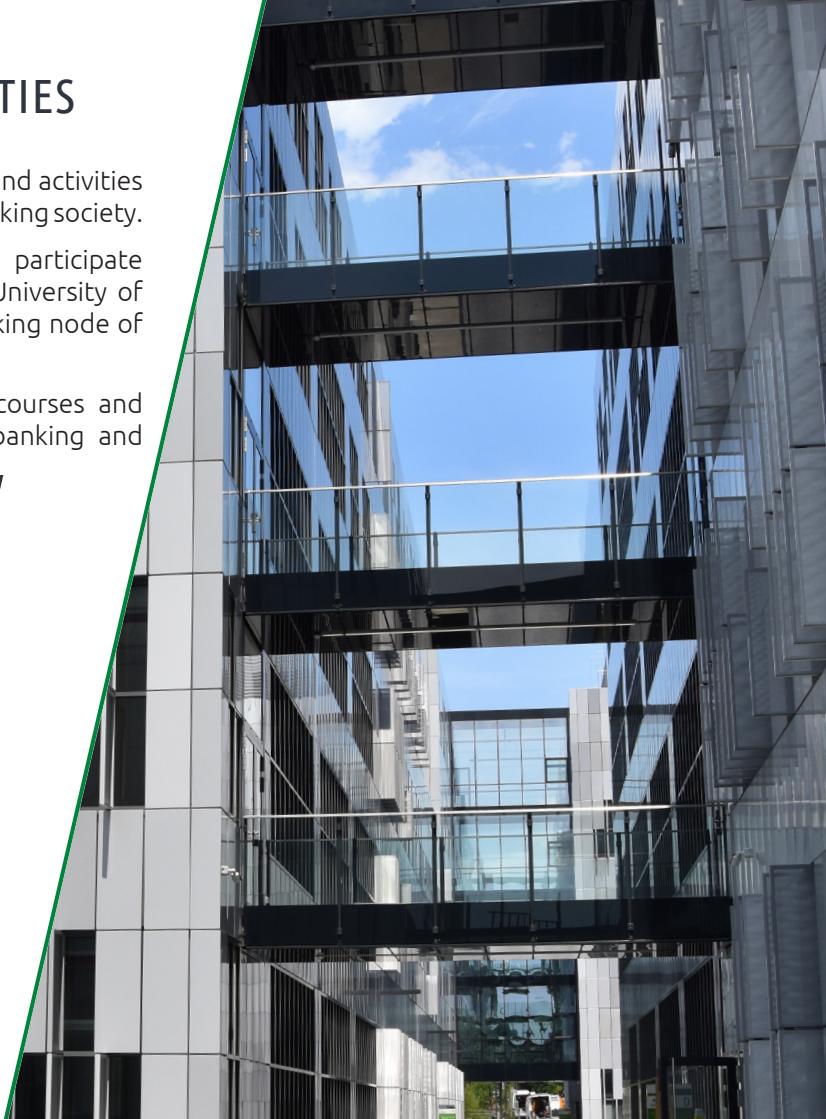
To facilitate national and international collaboration we participate in networking activities and calls. Moreover, the Medical University of Graz is an active member of BBMRI.at, the Austrian biobanking node of BBMRI-ERIC.

At Medical University of Graz, international biobanking courses and trainings are offered by the team of "International Biobanking and Education".

W <http://www.medunigraz.at/biobankeducation>  
E [biobank.edu@medunigraz.at](mailto:biobank.edu@medunigraz.at)



INTERNATIONAL SOCIETY FOR BIOLOGICAL  
AND ENVIRONMENTAL REPOSITORIES





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