A BBMRI.at Partner's Sample Collection Profile

"Prostate cohort": a sample collection of the Department of Urology at Biobank Innsbruck (Med Uni Innsbruck)

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The "Prostate Cohort" is a sample collection at Biobank Innsbruck (Department of Urology, Med Uni Innsbruck). It is a collection of matched frozen tissue, FFPE tissue and blood samples of malignant and partly benign cases with associated data on histologies, certain laboratory parameters and therapies of prostate cancer specimens over the past 30 years.

Profile of the Prostate Cohort:

Disease Area Research Area	Prostate, prostate cancer, prostate benign, PSA
Sample Types	Tissue Serum Urine
Cohort Size	From 12,000 patients: • 435,000 PSA values • 8,000 tissue samples (frozen/FFPE) (-80°C/RT) • 180,000 serum samples (-80°C) • 1,500 urine samples (-80°C) • 4,600 radical prostatectomy (RPE) surgery data • 13,000 biopsy data
Donors	Male
Associated Data	• First line treatment surgical data with histology data of biopsy and RPE samples, • follow-up data of control examinations and relapse-data, • second line treatment data such as radiation, drug treatment, chemotherapy, etc. and post-treatment data
Informed Consent	Declaration of consent available
Access	Yes - in the context of a scientific cooperation
Quality Standards	Certified laboratory according to ISO 9001:2015 Clinical standards in treatment and research: Universitätsklinik für Urologie - Labor - Qualitätsmanagement (tirol-kliniken.at)
Contact	**Principle investigator**: Department of Urology Innsbruck • Prof. Helmut Klocker (retired) • Dr. Martin Puhr **Email:** martin.puhr@i-med.ac.at
Publications:	On average 35 publications per year. A list of publications of the last 10 years can be found on this page: Universitätsklinik für Urologie - Labor - Publikationen & Wissenschaft (tirol-kliniken.at) Universitätsklinik für Urologie - Labore - Wissenschaft (tirol-kliniken.at)
Research projects	**52 Projects** • 23 of them are finished/closed/done • 29 of them are active or waiting to be started **View this and other cohorts from Biobank Urology in the BBMRI-ERIC Directory >>**
Contact	Principle investigator: Department of Urology Innsbruck • Prof. Helmut Klocker (retired) • Dr. Martin Puhr Email: Martin.Puhr@i-med.ac.at

Colorectal Cancer Cohort: "Colorectal Cancer Whole Slide Image Cohort":
an outstanding collection at Med Uni Graz (Institute of Pathology & Biobank Graz)

Summary

The "Colorectal Cancer Cohort (CRC-Cohort)" is a huge collection of colorectal cancer resection samples from the Institute of Pathology located at Biobank Graz at Medical University of Graz. It consists of various CRC sub-cohorts from colorectal cancer tissue with associated H&E, histological and immunhistochemical stainings where samples

have been analysed and supplemented by digital images of tissue slides in various projects.

A very well sub-cohort is the **"Colorectal cancer whole slide image cohort" (CRC WSI cohort)** which consists of 3 parts, i.e.:

1. "**CRC whole slide image - survival cohort"**
2. **"CRC whole slide image - vascular invasion cohort"**
3. **"CRC whole slide image – clinical annotation cohort"**

Profile of (1) "CRC whole slide image - survival cohort"

Disease Area	Colorectal cancer / ICD-10: C18.0
Research Area	Colorectal cancer, survival prediction, artificial Intelligence, etc.
Sample Types	• H&E stained FFPE tissue slides (RT storage) • Immunohistochemistry (IHC) on FFPE tissue slides (RT storage) • Whole slide images of H&E and IHC FFPE tissue slides
Cohort Size	• Over 180 000 images (resolution 0.25µm/pixel, over 800 TByte) • from 100 000 slides (H&E and IHC staining of FFPE tissue sections) • from over 6 400 cases • comprising tissue from colorectal cancer resections (tumour and non-tumour colon tissue, resection margins, fatty tissue, and associated lymph nodes)
Donors	Inclusion criteria: Patients with colorectal cancer as a primary diagnosis (C18), samples from 1984 to 2013 • Patient age: 18 – 100 years • Tumour stages: II to III • Ratio female : male = 45:55
Associated Data*	• Pathology diagnosis • TNM staging • ICD-10 and ICD-O codes • Survival data • Meta data from whole slide images
Informed Consent	Depending on year of collection with or without informed consent
Access	Access for collaborative research projects depending on ethics committee approval of Medical University of Graz
Quality Standards	ISO 9001:2015 (Biobank Graz)
Contact	Univ.-Prof. Dr. med. univ. Kurt Zatloukal **Email:** kurt.zatloukal@medunigraz.at

Profile of (2) "CRC whole slide image - vascular invasion cohort"

Disease Area	Colorectal cancer / ICD-10: C18.0
Research Area	Colorectal cancer, inflammation, artificial Intelligence, etc.
Sample Types	• H&E stained FFPE tissue slides (RT storage) • (Immuno)histochemistry (IHC) on FFPE tissue slides, Elastica van Giesson staining, vascular endothelial marker IHC (CD-31) (RT storage) • Whole slide images of H&E and IHC FFPE tissue slides
Cohort Size	• Approx. 800 whole slide images (resolution 0.25µm/pixel) • from ~ 800 slides (H&E, histochemical and IHC staining of FFPE tissue sections) • from over 260 cases • comprising colorectal tumour tissue
Donors	Inclusion criteria: Patients with colorectal cancer as a primary diagnosis (C18), samples from 1984 to 2013 • Age: 18 – 100 years • Stages: I to IV • Female, male
Associated Data*	• Pathology diagnosis • TNM staging • ICD-10 and ICD-O codes • Clinical data* • Survival data • Meta data from whole slide images *see details about associated data below
Informed Consent	Depending on year of collection with or without informed consent
Access	Access for collaborative research projects depending on ethics committee approval of Medical University of Graz
Quality Standards	ISO 9001:2015 (Biobank Graz)
Contact	Univ.-Prof. Dr. med. univ. Kurt Zatloukal **Email:** kurt.zatloukal@medunigraz.at

Profile of (3) "CRC whole slide image – clinical annotation cohort"

Disease Area	Colorectal cancer / ICD-10: C18.0
Research Area	Colorectal cancer, artificial Intelligence, etc.
Sample Types	• H&E stained FFPE tissue slides (RT storage) • Immunohistochemistry (IHC) on FFPE tissue slides (RT storage) • Whole slide images of H&E and IHC FFPE tissue slides

Cohort Size	- Approx. 1800 whole slide images (resolution 0.25µm/pixel) - from ~ 800 slides (H&E and IHC staining of FFPE tissue sections) - from over 100 cases - comprising tissue from colorectal cancer resections (tumour and non-tumour colon tissue, resection margins, fatty tissue, and associated lymph nodes)
Donors	Inclusion criteria: Patients with colorectal cancer as a primary diagnosis (C18), samples from 1984 to 2013 - Age: 18 – 100 years - Stages: II and III - Female, male
Associated Data*	- Pathology diagnosis - TNM staging - ICD-10 and ICD-O codes - Clinical data* - Survival data - Meta data from whole slide images *see details about associated data below
Informed Consent	Depending on year of collection with or without informed consent
Access	Access for collaborative research projects depending on ethics committee approval of Medical University of Graz
Quality Standards	ISO 9001:2015 (Biobank Graz)
Contact	Univ.-Prof. Dr. med. univ. Kurt Zatloukal **Email:** kurt.zatloukal@medunigraz.at

Find the overall **Colorectal Cancer Cohort in the BBMRI-ERIC Directory>>**

Scientific publications & press – examples (Sub-cohort (1)):

- Wulczyn E, Steiner DF, Moran M, Plass M, Reihs R, Tan F, Flament-Auvigne I, Brown T, Regitnig P, Chen PC, Hegde N, Sadhwani A, MacDonald R, Ayalew B, Corrado GS, Peng LH, Tse D, Müller H, Xu Z, Liu Y, Stumpe MC, Zatloukal K, **Interpretable survival prediction for colorectal cancer using deep learning.** Mermel CH. NPJ Digit Med. 2021 Apr 19;4(1):71. DOI: 10.1038/s41746-021-00427-2, PMID: 33875798; PMCID: PMC8055695

- L'Imperio V, Wulczyn E, Plass M, et al. Pathologist Validation of a Machine Learning-Derived Feature for Colon Cancer Risk Stratification. JAMA Netw Open. 2023;6(3):e2254891. DOI:10.1001/jamanetworkopen.2022.54891, PMID: 36917112; PMCID: PMC10015309

- Media article about research collaboration of Med Uni Graz and Google on revolutionary findings with relevance for diagnostics: algorithms are declaring war on cancer (Kleine Zeitung 2021) >>

Projects

- Sub-cohort (1): **Industry collaboration**
- Sub-cohort (2) and (3): **Both sub-cohort are sub-collection of the CRC collection that was part of the EU H2020 project ADOPT BBMRI-ERIC (** grant agreement number: 676550**)**

View video on ADOPT BBMRI-ERIC & Colorectal Cancer (Euronews)>>

Find details about the European CRC Cohort here>>

***Data associated with s**ub-cohort "ADOPT CRC Cohort"
- Sex
- Participation in clinical study (yes/no)
- Age at primary diagnosis
- Time of recurrence (metastasis)
- Family history of cancer
- Other diseases:
  - other cancers
  - Inflammatory bowel disease
  - Intestinal polyps
  - other disease requiring therapy (e.g., cardio-vascular, endocrine. musculoskeletal)

- Tumor markers (e.g., CEA) (if available)

- Vital status and survival information
  - Timestamp of last update of vital status
  - Overall survival status
- Surgery: aggregate object
  - Time difference between initial diagnosis and surgery
  - Surgery radicality
  - Type of surgery
- Pharmacotherapy:
  - REQUIRED if occurred
  - Start of pharmacotherapy (relative date referring to the primary diagnosis)
  - Scheme of pharmacotherapy
- Targeted therapy:
  - REQUIRED if occurred
  - Start of targeted therapy (relative date referring to the primary diagnosis)
  - End of targeted therapy (relative date referring to the primary diagnosis)
- Radiation therapy:
  - REQUIRED if occurred

- Start of radiotherapy (relative date referring to the primary diagnosis)
    - End of radiotherapy (relative date referring to the primary diagnosis)
- Response to therapy
    - The response is linked to the patient and specified by a timestamp. This is to avoid need to specify to which therapy the response is, since there might be combination of different therapies.
    - Specific response
- Molecular markers (if available)
    - Microsatellite instability
    - Mismatch repair gene expression – IHC array for different genes (common for 3; if applicable)
    - Risk situation (only HNPCC)
    - RAS mutation status (if applicable)
    - BRAF, PIC3CA. HER2 mutation status (optional)
- Histopathology
    - pTNM
    - UICC staging
    - WHO grading
    - Histological classification (according to WHO)
    - Localization of the tumor
    - High resolution digital images (resolution < 0.25 Microns/pixel) of the tumor, resection margin and lymph nodes
- Diagnostic exam
    - Result of colonoscopy
    - Array of diagnostic methods (results of liver imaging, lung imaging, MRI, CT; if occurred)

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