Biobanking

Brokerage Event 2016
Regenerative Medicine and Bioinformatics
What is a biobank?

The bank of biological material.

What do we do in a biobank?

We collect and archive biological material.

What is the purpose of a biobank?

The main purpose is research.
Biobank in Ostrava

• Biobank was established in 2012 as a part of Department of Hematooncology

• It is a joint project of the University Hospital Ostrava and the University of Ostrava

• Our main aim so far is collection of biological material from patients with hematooncological diseases

• We cooperate also with other departments, hospitals etc.
Logistic

- Informed consent
- Sampling kit
- Laboratory manual
- Transport
- Storing
- Processing
Sampling

Patient is informed about the possibility of sampling for the purpose of biobanking

Patient signs an informed consent

Sampling for biobank is done as a part of the routine sampling for clinical assessment

Everything is anonymous – each sample has its own code
Sampling – What types of samples are collected?

- Peripheral blood
- Bone marrow
- Cerebrospinal fluid (CSF)
  - in case of lymphomas
- Tissue – subcutaneous abdominal fat
  - in case of AL amyloidosis
- In cooperation with other departments
  - Fluids, tissues...
Sampling – What types of diagnoses are archived in biobank?

- All of the haematological malignancies
- In cooperation with other departments
  - Malignancies, samples for specific projects
- Biological material from healthy donors as a control group
  - Bone marrow
  - Peripheral blood
Archiving of biological material from healthy donors – bone marrow

Cooperation with Department of orthopedics

DEPARTMENT OF HEMATOONCOLOGY
Sample processing

- DNA isolation from whole blood by automatic isolator
- Centrifugation
  - preparation of aliquots of serum and plasma
- Cell separation
  - density gradient centrifugation
  - magnetic activated cell sorting
Cell separation

Density gradient centrifugation

Blood sample + buffer

Centrifugation

Ficoll

Plasma + thrombocytes

Mononuclear cells

Ficoll

Granulocytes, erythrocytes
Cell separation

Density gradient centrifugation

Before centrifugation

After centrifugation

Mononuclear fraction
Freezing of biological material

- Serum
- Plasma
- DNA
- CSF
- Tissue

- Cells
  - in a freezing medium (90 % FBS, 10 % DMSO)
  - as a dry pellet (shock freezed in liquid nitrogen)

Ultra-low temperature freezer (-80 C)

Liquid nitrogen (-196 C)
We cooperate with...

- Hematologists from the Czech Republic – collection of samples for the biobank
- Foreign hematologists – collection of samples from patients with rare hematological malignancies
- Other departments in University Hospital Ostrava – cooperation on specific projects
- Scientists from the Czech Republic and abroad
  - biobank collect samples for the specific research projects
  - biobank release samples for research
Central lab for academic clinical trials

• AC – 004 – EU – AL amyloidosis, new diagnosis

• ECWM-1 – M. Waldenström, new diagnosis

• EMN02/HOVON – Multiple myeloma, new diagnosis

• EMN11/HO114 – Multiple myeloma, relapse
Participation on projects

<table>
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<th>Year</th>
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<th>National</th>
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Projects supported by Ministry of Health, Czech Republic (UH Ostrava)

- 2013 – 2 projects
  - MH CZ -DRO - FNOs/2013 -11, 12
- 2014 – 2 projects
  - MH CZ -DRO - FNOs/2014 -17,22
- 2015 – 2 projects
  - MH CZ -DRO - FNOs/2015-24
  - 15-30015A
- 2016 – 4 projects
  - MH CZ -DRO - FNOs/2016-20, 21
  - 16-31156A, 16-31092A

Department of Haematoncology
Other projects in UH Ostrava

• Otorhinolaryngology Clinic – dacryolits
• Neurosurgery Clinic – glioblastoma, intravertebral discs
• Department of Neonatology – HELLP syndrom
• Department of Neuroradiology and Angiology intervention
• Department of Gastroenterology, Metabolism and Nutrition – projects BAR, ENDOMINA, GI WINDOW
Thank you for your attention