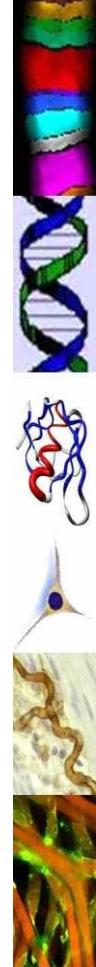
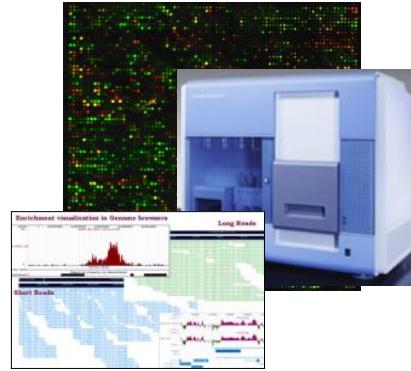


# Structural and molecular quality of tissue samples after 10 years storage



Effects of different protocols based on -  
80° C and liquid nitrogen.

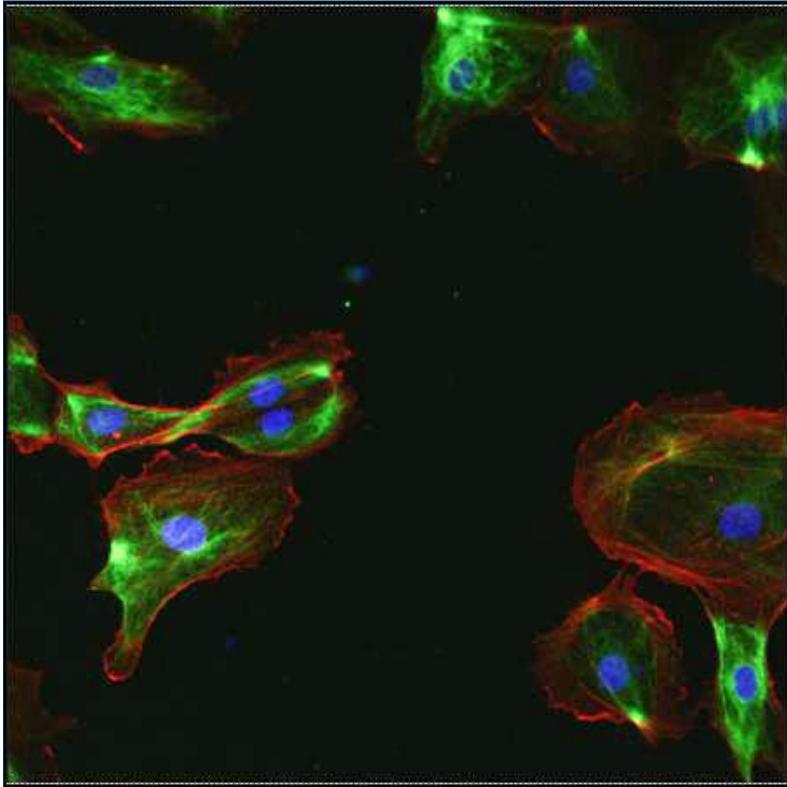
Gothenburg, 7<sup>th</sup> September 2022

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# Tissue Biobanking for Precision Medicine

Structural and functional parameters of cell metabolism:

- Receptors
- Growth factors
- Signaling molecules
- Enzymes
- „small functional molecules“



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## Factors sensitive to environmental changes

# Influencing factors for the quality of biobank tissue samples

## Surgical theater



Medication  
Anaesthesia  
Ischaemia

## Institute of Pathology

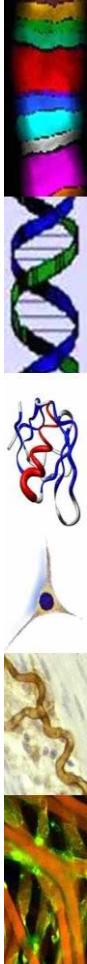


Transportation  
Cold ischaemia

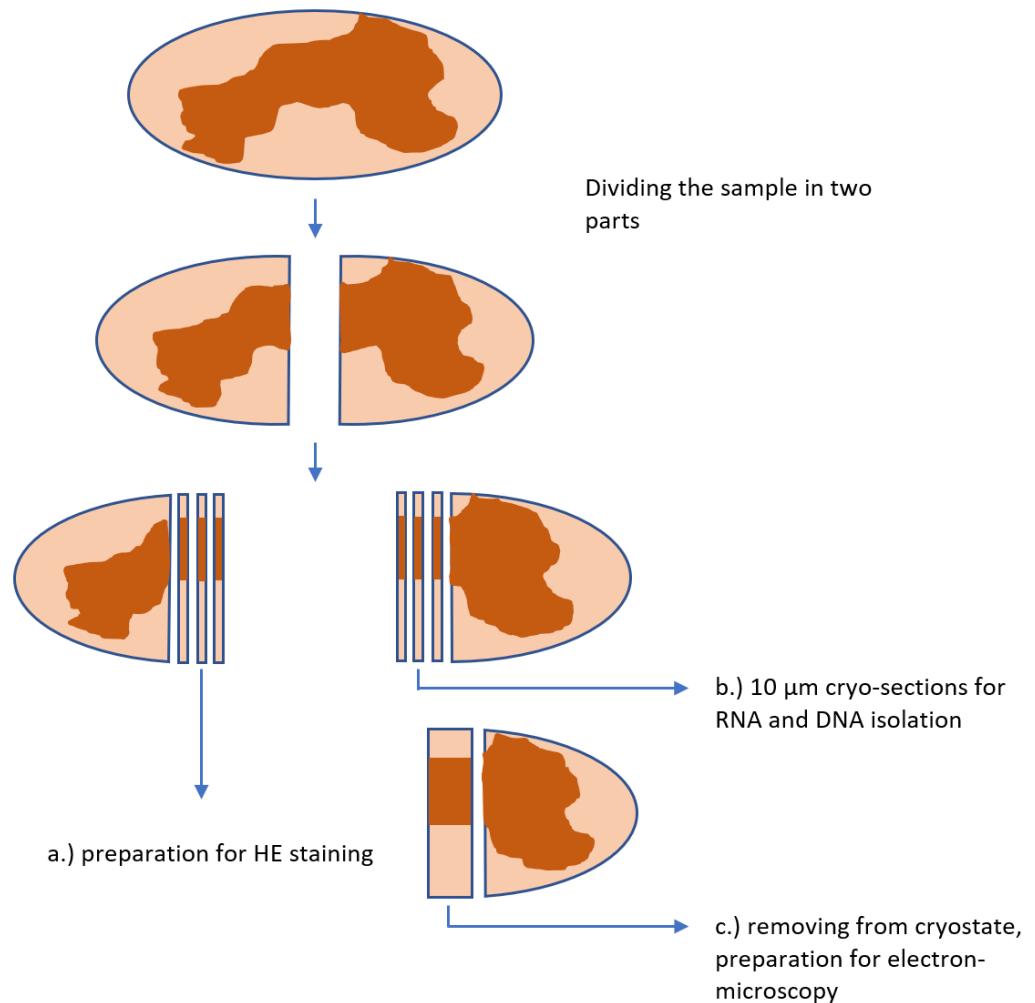
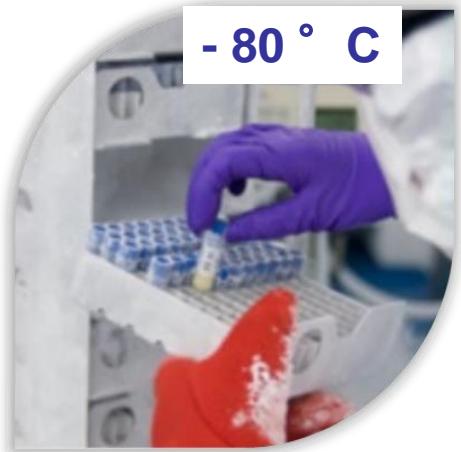
## Biobank storage



Environmental oscillations



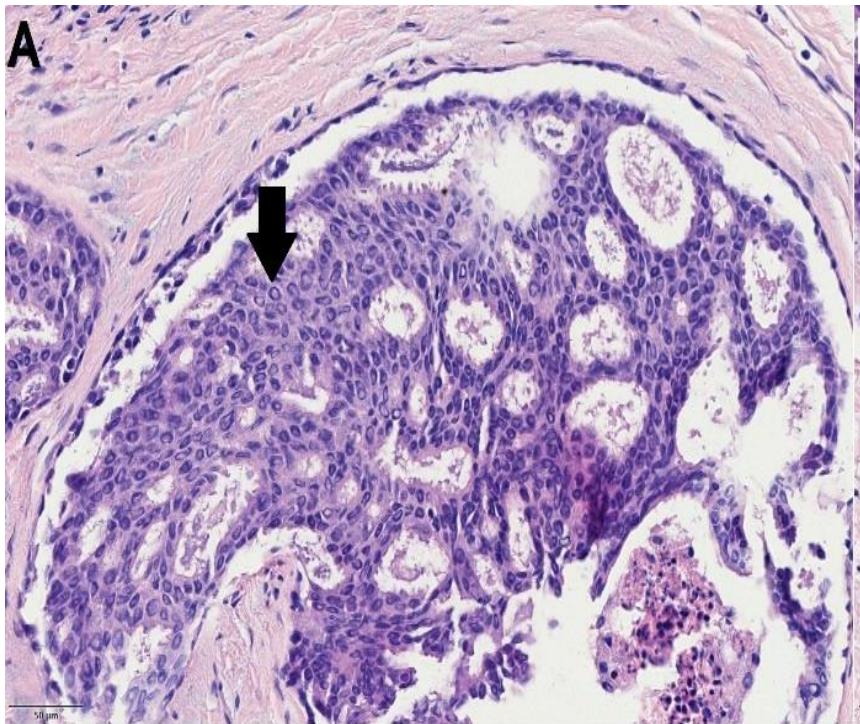
# The Impact of storing condition on the biological quality



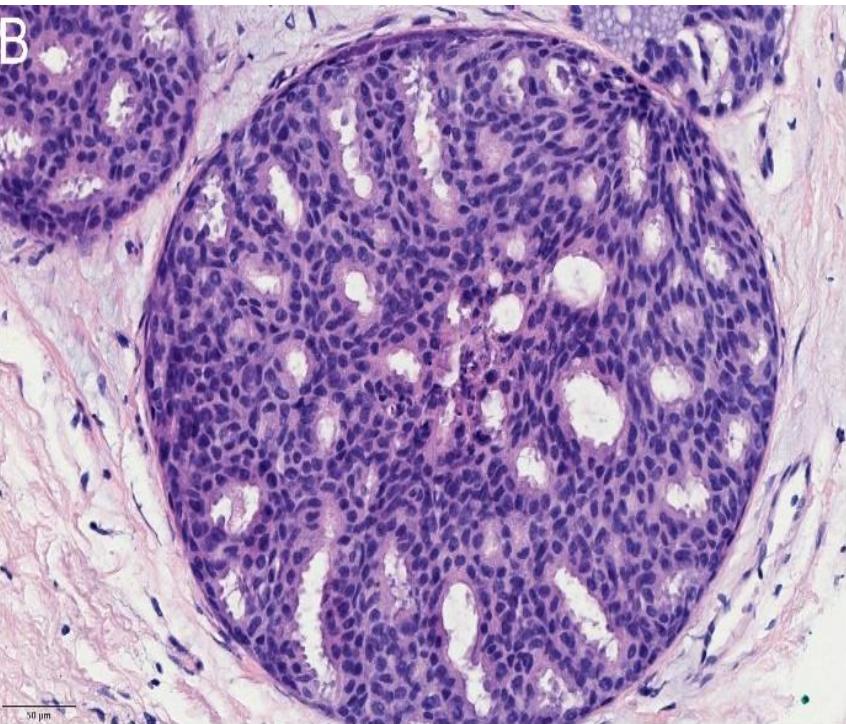
MD thesis  
Maximilian Babel

# The Impact of storing condition on the biological quality

- 80 ° C

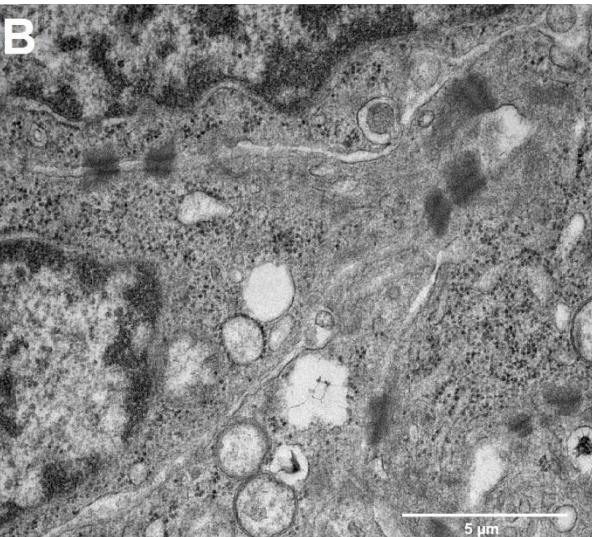
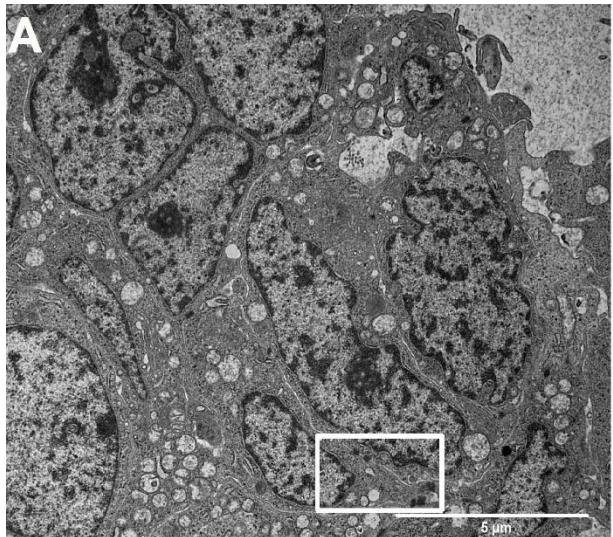


liquid nitrogen

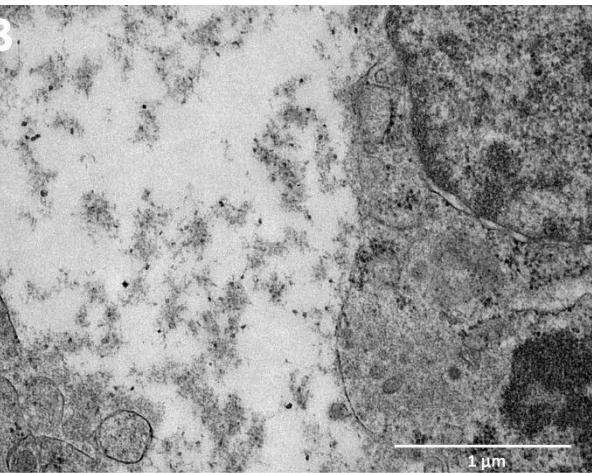
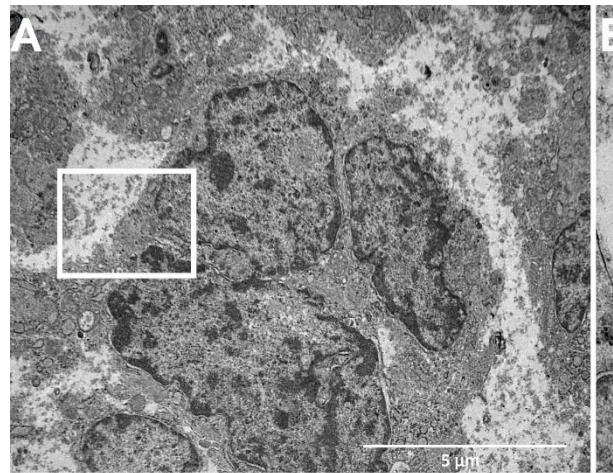


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# Biological Integrity of cells stored in -80° C and in the gas phase of N<sub>2</sub>



nitrogen



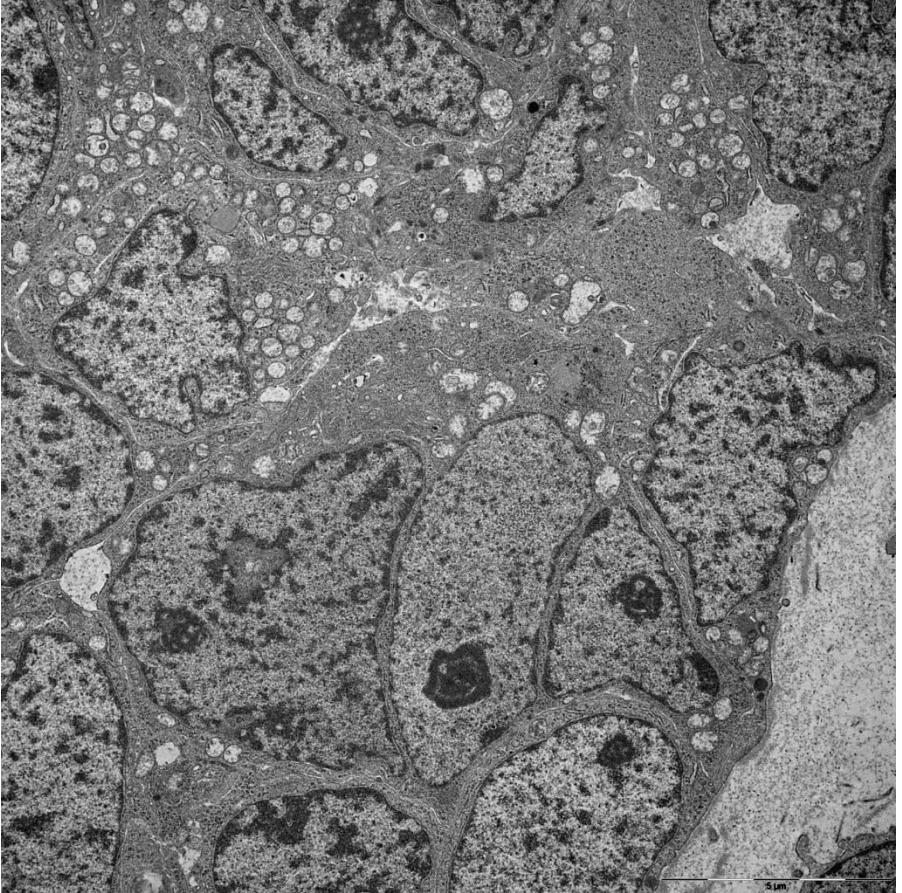
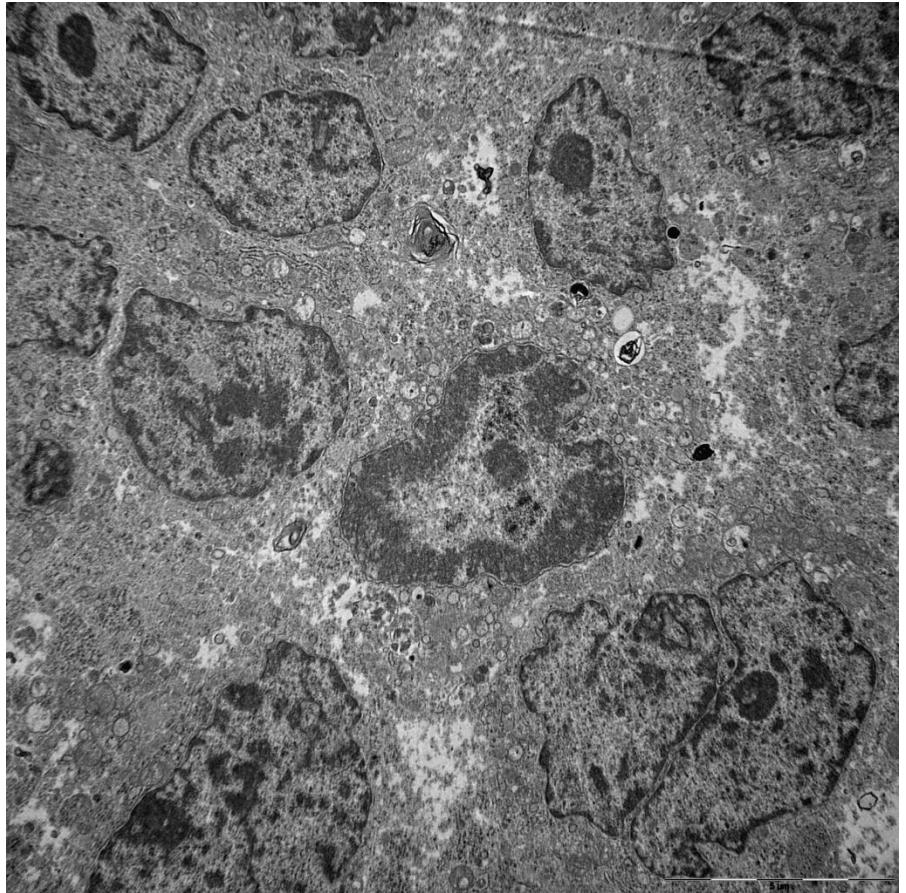
- 80 ° C

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# Biological Integrity of cells stored in -80° C and in the gas phase of N<sub>2</sub>

-80° C

gas phase of N<sub>2</sub>

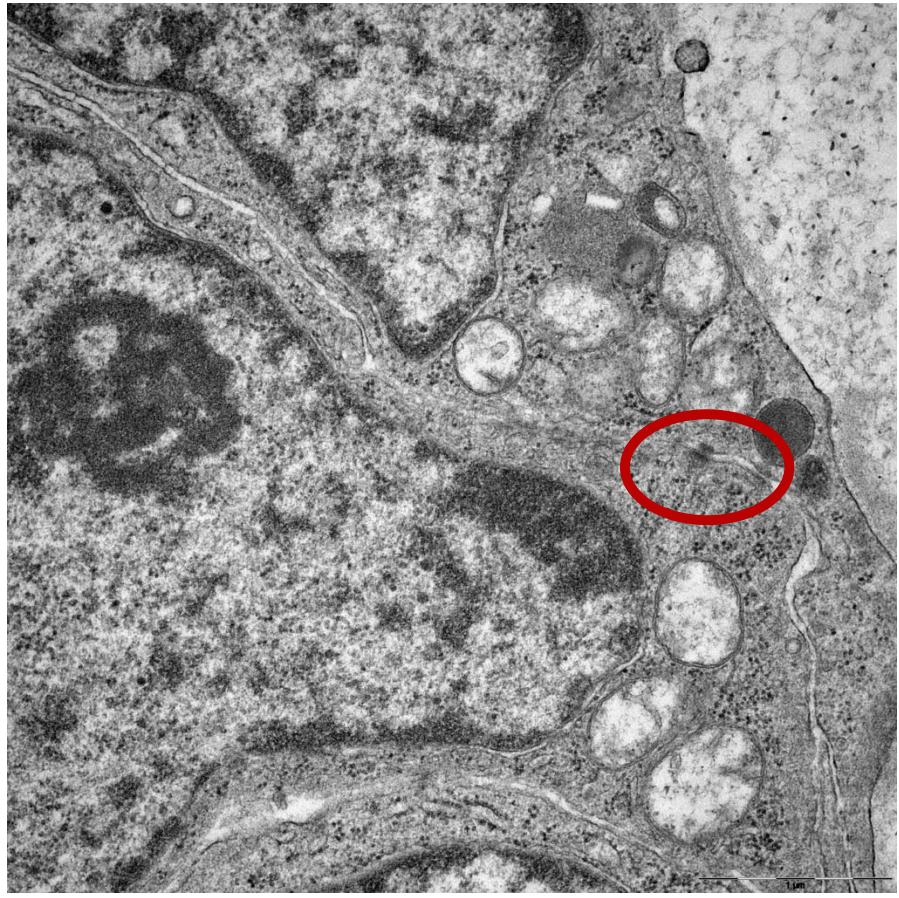
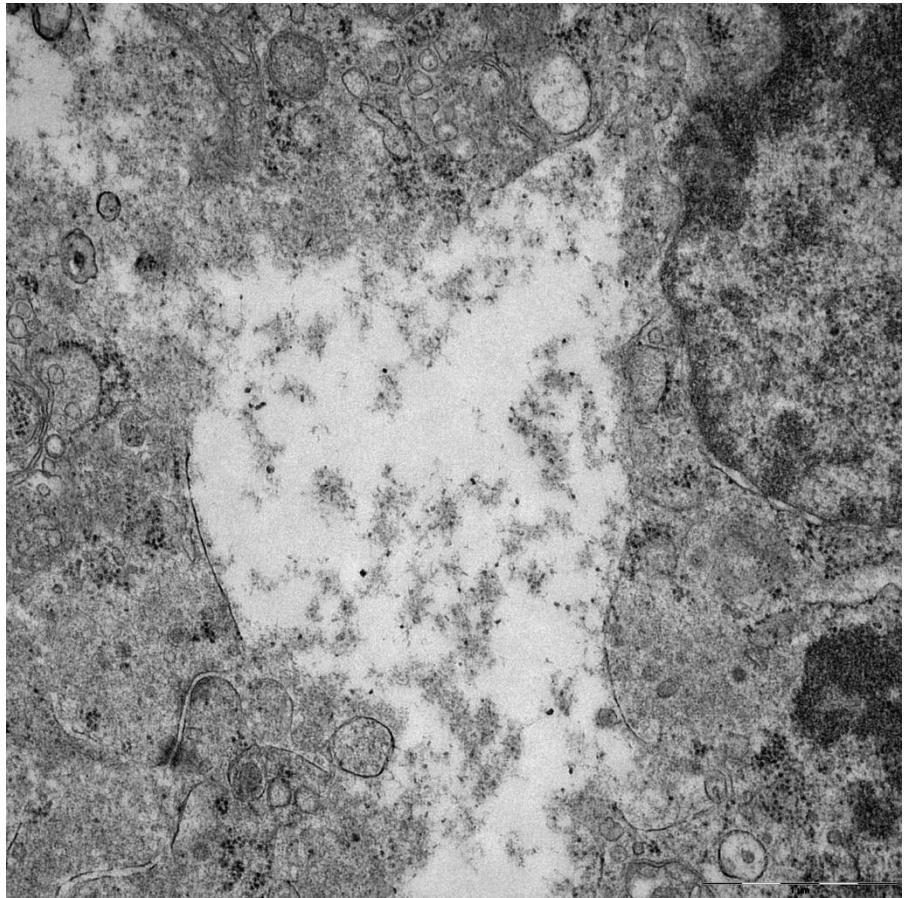


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# Biological Integrity of cells stored in -80° C and in the gas phase of N<sub>2</sub>

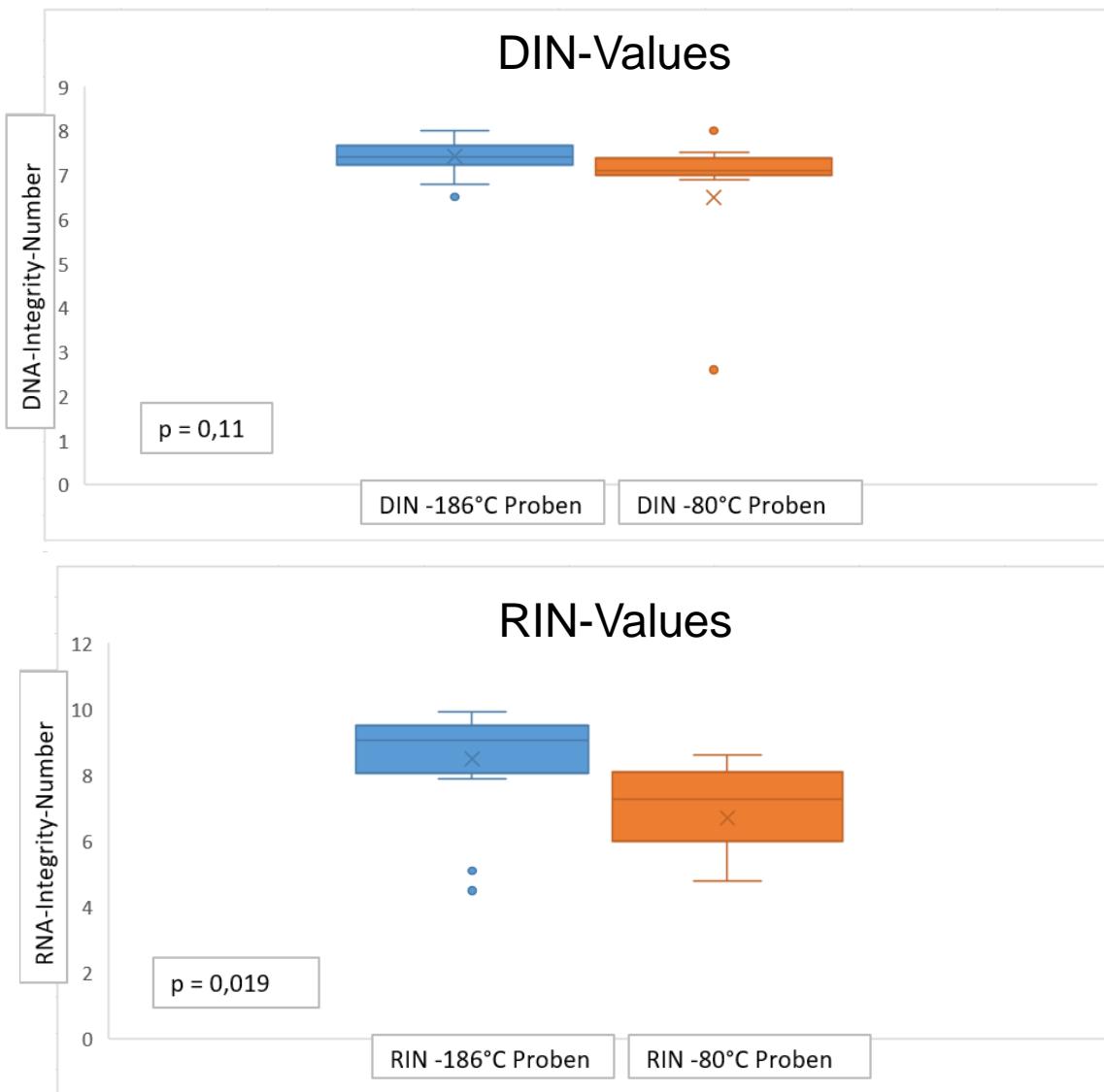
-80° C

gas phase of N<sub>2</sub>

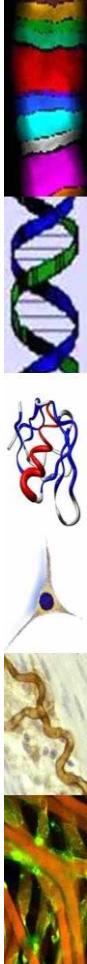


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# Quality of DNA and RNA



Babel M et al. Sci Rep. 2020;10: 14404. doi: 10.1038/s41598-020-71441-9.



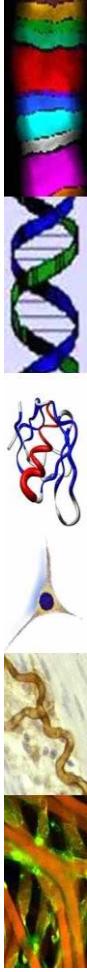
# CONCLUSIONS

Our data demonstrates that...

...Storage condition has relevant impact on the biological quality of a tissue sample

...Long-term storage in the gas phase of nitrogen prevent critical morphological structures

...Long-term storage in the gas phase of nitrogen prevent RNA-quality



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**ESBB**  
European, Middle Eastern & African Society  
für Biobanking und Biobanking

**BBMRI-ERIC®**

**Tak sa mycket**

**registration at [www.esbb.org](http://www.esbb.org)**

**KEYNOTE**

**Carolyn Compton**  
Professor, School of Life Sciences, Arizona State University, Laboratory Medicine and Pathology, Mayo Clinic

**Biobanking for Biomedicine**  
*The Clarion Call for Quality*

**19-20 SEPTEMBER, REGENSBURG, GERMANY**

**ROADSHOW**



**[christoph.brochhausen@ukr.de](mailto:christoph.brochhausen@ukr.de)**



Institut für Pathologie  
Universität Regensburg

Deutschland  
Land der Ideen



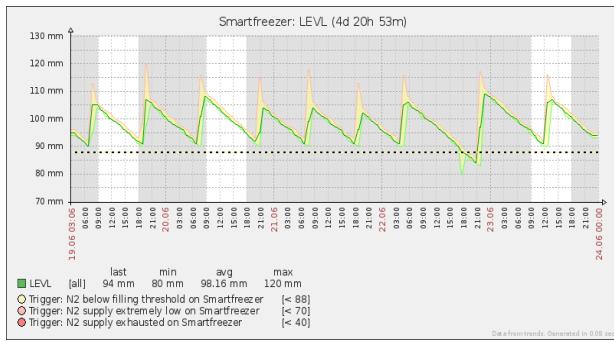
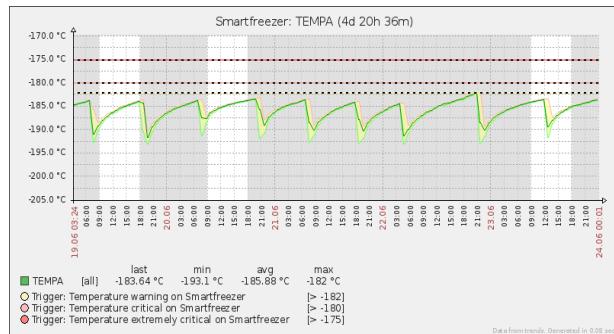
Ausgewählter Ort 2012



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# Long-term monitoring of temperature and N<sub>2</sub>-level

Post-Doc  
Hinrich Winther



PROBLEM: N2 below filling threshold on Smartfreezer

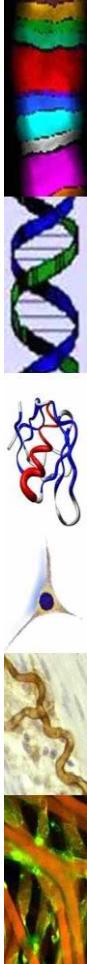
smartfreezer-mon-pt@unimedizin-mainz.de 22.6.2014 19:44 Aktionen ▾

Trigger: N2 below filling threshold on Smartfreezer  
Trigger status: PROBLEM  
Trigger severity: Warning  
Trigger URL:

Item values:

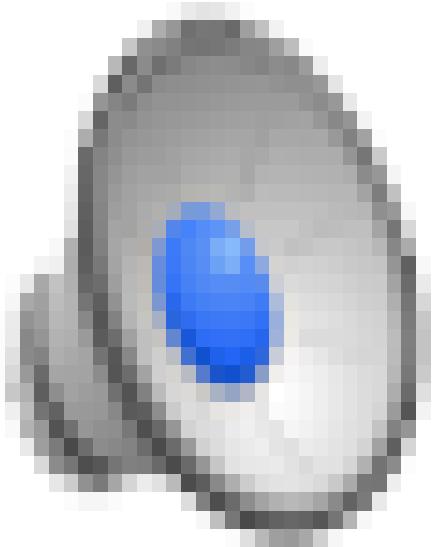
1. LEVL (Smartfreezer:TEC[LEVL?]): 87 mm
2. \*UNKNOWN\* (\*UNKNOWN\*: \*UNKNOWN\*): \*UNKNOWN\*
3. \*UNKNOWN\* (\*UNKNOWN\*: \*UNKNOWN\*): \*UNKNOWN\*

Original event ID: 24714



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# Full-automatic robotic biobank system



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