



# Integrated Biobank of Luxembourg (IBBL)

JRMT, 16 October 2024

Claire Barbieux, Head of IBBL



# Scope and missions

# Integrated translational capacities: TMOH



TMOH takes care of the operations to support translational medicine research



Better Samples  
Better Data  
Better Science

# Our missions

- Provide high quality biomaterial and associated data



Blood



Saliva



Urine



Stool



Swab



CSF



Hair



Skin biopsy



Healthy and tumor tissue

- Eliminate sample processing-related bias

- Ensure samples are fit for purpose





## Quality-controlled environment

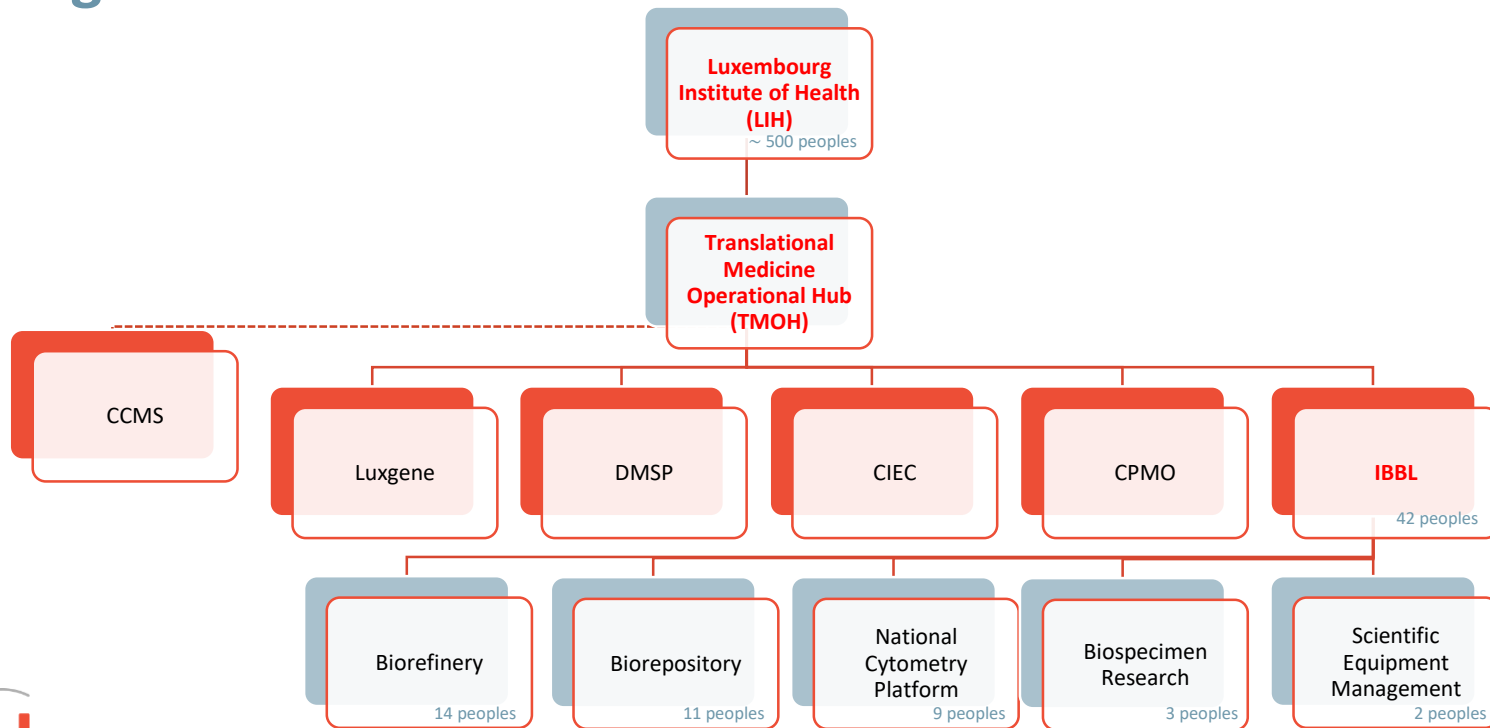
- **ISO 9001** certified → documentation and traceability of every single step
- **ISO 17025** accredited → competence of testing and calibration laboratories





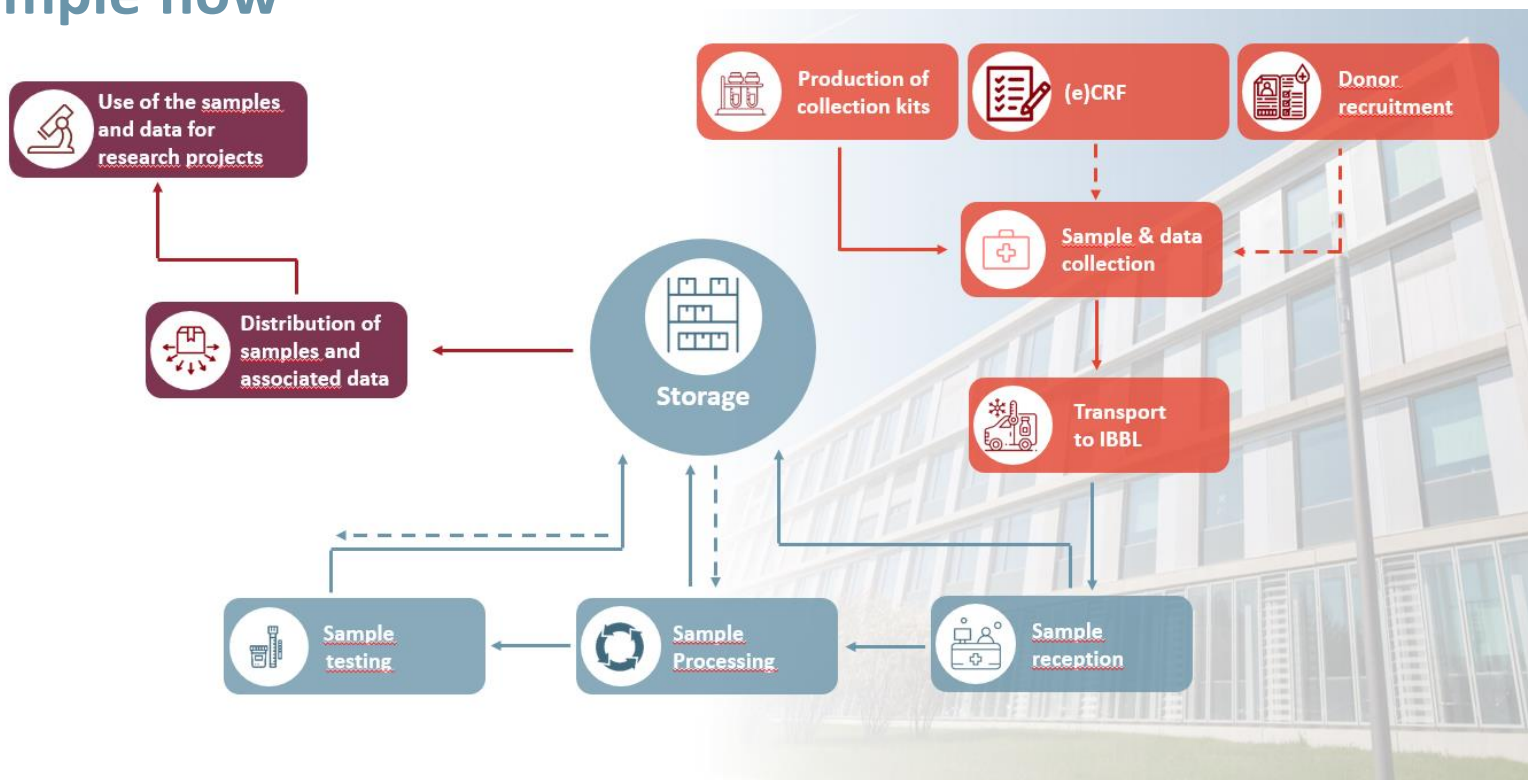
# Activities

# Organisation chart





# Sample flow





# Core biobanking activities

# Biorepository

To ensure a standardized collection of biospecimens:

- Barcoded collection tubes.
- Material to support collection
- Processing tubes
- Transport packaging

## Collection Kits

Transport is a critical factor for biospecimen/sample integrity/quality.

- Most appropriate transport solution
- ADR/IATA compliance
- Daily Shuttle implemented within Luxembourg

## Logistics

Optimal conservation

- LN2, FR80, FR20, FR04, RT
- Monitored and controlled environment (2 systems)
- 24/7 on call staff

## Storage

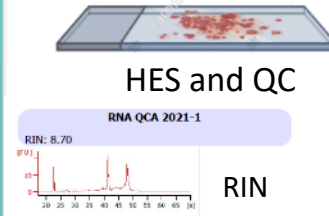
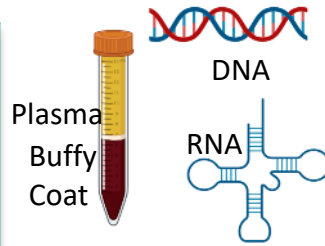
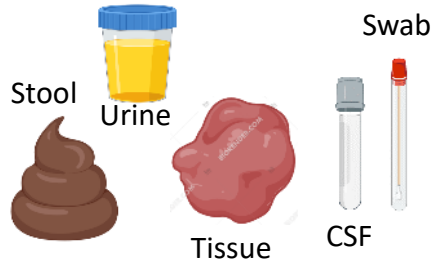
The receipt of biospecimen is a QC step

- Shipment verification (temperature, integrity...)
- Registration and annotation of QC in the LIMS

## Reception



# Biorefinery

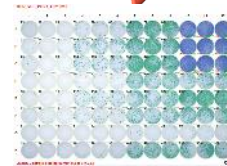
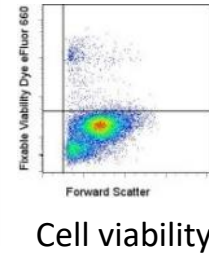
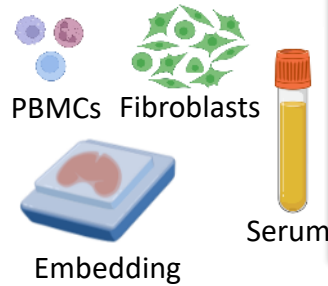
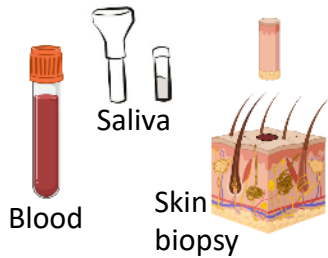


**External QC via Proficiency testing**  
(international standards)

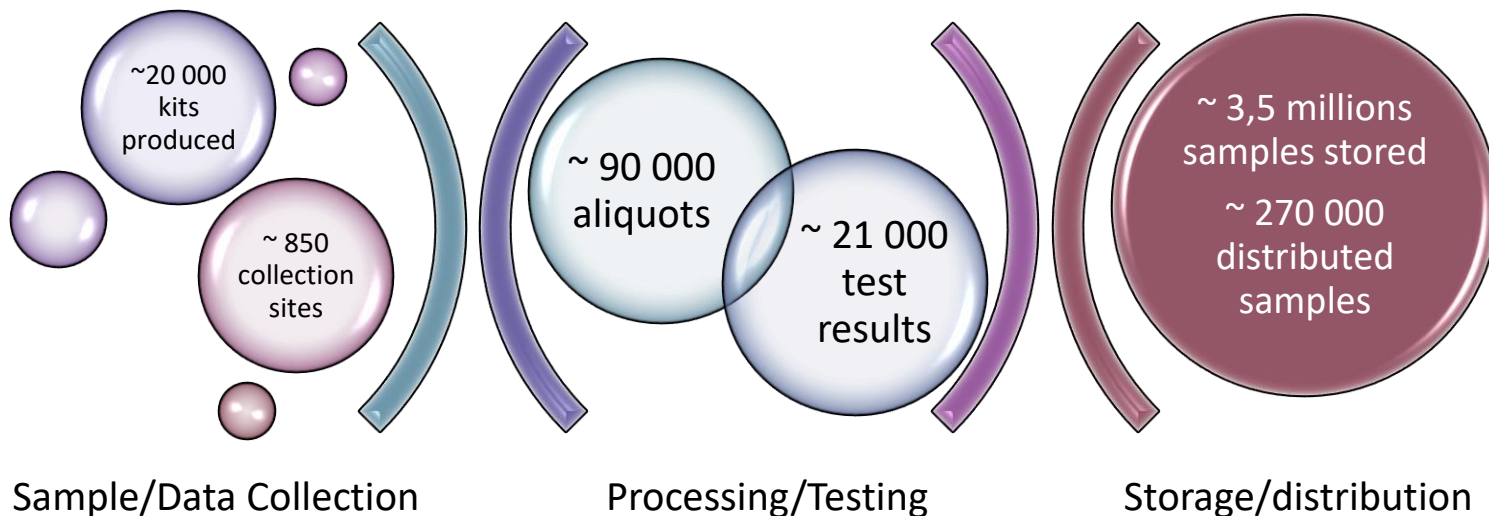
*Biospecimen*

*Processing*

*Testing (QC)*



## Biobanking numbers





# Sample analysis

# Biorefinery- Sample characterization

## Molecular Biology



Single or multiplex qPCR

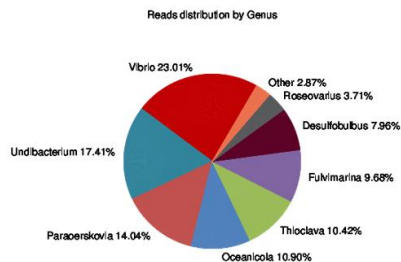


Digital droplet PCR

## Luminex



## Sequencing (16S)



## Metabolomics (upcoming)



# National cytometry platform

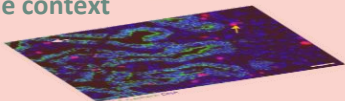
## Imaging



ZEISS LSM 980 with Airyscan 2



Tissue context



ImageStream



Suspension



## Flow cytometry

Fortessa



ID7000 Spectral



Quanteon



CyTOF



Mass cytometry

## Sorting

FACSymphony S6

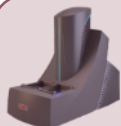


## Single cell sequencing

Chromium X



Multiplex  
immunoassay



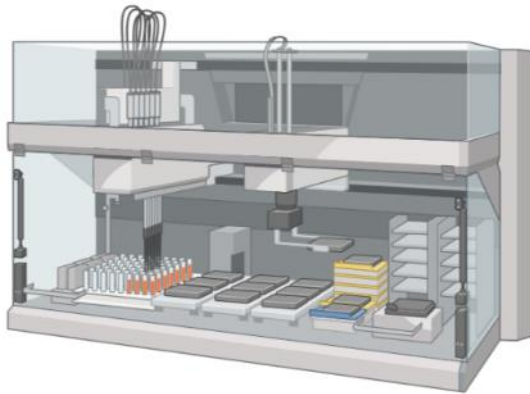




# Supporting activities

# Better methods for better samples

## New equipment implementation



~ 160 equipments  
incl. 25 complex

- Qualification
- Validated Assay protocol
- Validated work instructions
- Staff training

## Biospecimen Research

Improving the methods/process to get the best out of the samples



[J Histochem Cytochem](#). 2020 Mar; 68(3): 171–184.

Published online 2020 Feb 11. doi: [10.1369/0022155420906234](https://doi.org/10.1369/0022155420906234)

PMCID: PMC7045302

PMID: [32043912](https://pubmed.ncbi.nlm.nih.gov/32043912/)

Effect of Different Proteinase K Dige<sup>National cytometry platform</sup> Deparaffinization Methods on Yield and Integrity of DNA Extracted From Formalin-fixed, Paraffin-embedded Tissue

[Zoe Frazer](#), [Changyoung Yoo](#), [Manveer Srova](#), [Camille Bellora](#), [Brian L. DeWitt](#), [Ignacio Sanchez](#), [Geraldine A. Thomas](#), and [William Mathieson](#)



JRMT 2024

25/10/2024



LUXEMBOURG  
INSTITUTE  
OF HEALTH

# Conclusion

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# Perspectives

- To remain at the cutting-edge
- More standards, more automated, high-throughput  
→ Reduced cost
- Happy to support further research projects
- Better samples, better data, better science

