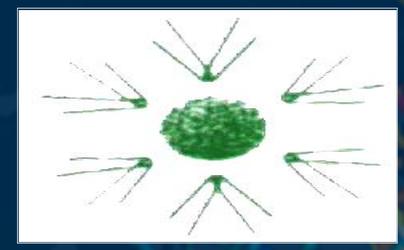
EUROPE BIOBANK WEEK 2020

17 – 20 November | **Virtual Conference**

BIOBANKING FOR GLOBAL CHALLENGES

Prostate cancer bio-banking: exoRNA suitable for sequencing in a single aliquot of patients' urine



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INTRODUCTION

Cancer biobanks are of considerable importance in the field of clinical research.

The possibility for researchers to access such banks of samples and databases is becoming of greater interest.

Research related to identify biomarkers of prostate cancer, the most common malignancy in men in Western world, is hampered by the limited availability of biological samples with associated clinical data.

AIM

The aim is the establishment of a biobank of urine samples from patients who undergo prostatic needle biopsy for diagnostic purposes.

The creation of this biobank constitute a highly innovative and scientifically relevant element for comprehensive analysis of urinary exoRNA in prostate adenocarcinoma by a highly sensitive next-generation sequencing to identify disease-related biomarkers.

METHOD

Between March 2008 and July 2020, we enrolled patients who would undergo ultrasound guided prostate needle biopsy.

They signed an informed consent to the management of their personal data, to the storage of their biological material and to the use of this biological material for research purposes.

Each patient's data were recorded in CryoSMART software system while biological samples were stored in biobank (urine, plasma, serum and a fresh-frozen frustule of the biopsy).

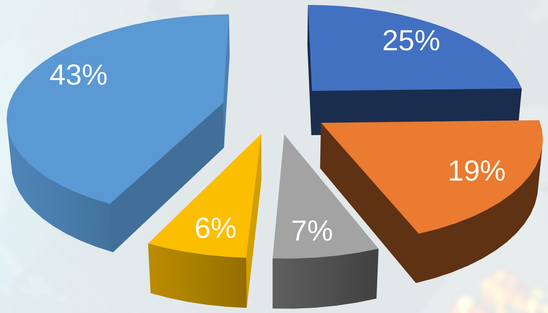
Urinary exoRNA was extracted, reverse-transcribed and examined by Agilent 2100 Bioanalyzer using a single aliquot of urine from 20 patients.

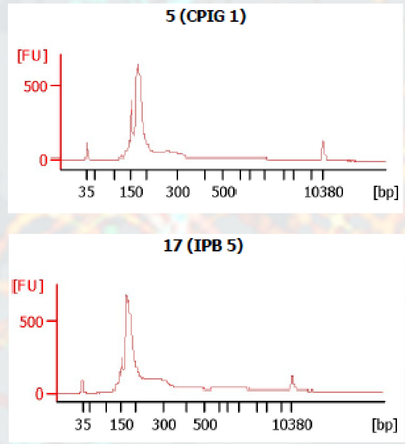
RESULTS

Prostate cancer biobank included 295 patients with complete clinical data.

Immunohistochemical analysis showed that most are diagnosed with prostate adenocarcinoma (43%) while some were benign prostatic hyperplasia (25%).

cDNA electropherogram results from Bioanalyzer showed a clean product with distinct peaks spanning 150 bp to 300 bp.





Electropherogram profiles of cDNA libraries at Bioanalyzer of urinary exoRNA isolated from adenocarcinoma (upper panel) and benign prostatic hyperplasia (below panel)

CONCLUSIONS

We have positively verified that exoRNA from a limited volume of urine biobanked is suitable for further transcriptome sequencing therefore establishment of a large biobank composed of high-quality and well characterized prostate cancer patient samples can play a crucial role in identification of non-invasive biomarkers for prostate cancer.

REFERENCES

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